JULY 1953

The Paper Industry

Nalco #71

PAPER MILL ANTIFOAM

PUBLIC LIBRARY
JUL 30 1953
DETROIT

☆ **CONTROLS** foam and bubble formation over wide pH range—4.0 to 9.5!

☆ **ELIMINATES** bubble formation on wires.

☆ **EASY** to mix and feed.

☆ **NO EFFECT** on other materials in the furnish.

☆ **ECONOMICAL**—Average cost less than 15¢ PER TON of paper produced.

NALCO 71 not only positively eliminates foam and bubble formation in paper machine systems without affecting the furnish, but it also *stays in the water.* This means that remarkably small dosages of 71 efficiently prevent foam overflows, wadding, uneven caliper and other foam difficulties. Churning of Jordans, action of stock pumps and the flow of stock—the very things that cause foaming in untreated systems—all promote better action of Nalco 71!

Complete information on Nalco 71—and on other Nalco Chemicals for paper manufacturing use will be furnished upon request. Write today for prompt action on a permanent solution for your foaming problems.

NATIONAL ALUMINATE CORPORATION
6232 West 66th Place
Chicago 38, Illinois
Canadian inquiries should be addressed to Alchem Limited, Burlington, Ontario, Canada

THE Nalco SYSTEM
Serving the Paper Industry through Practical Applied Science

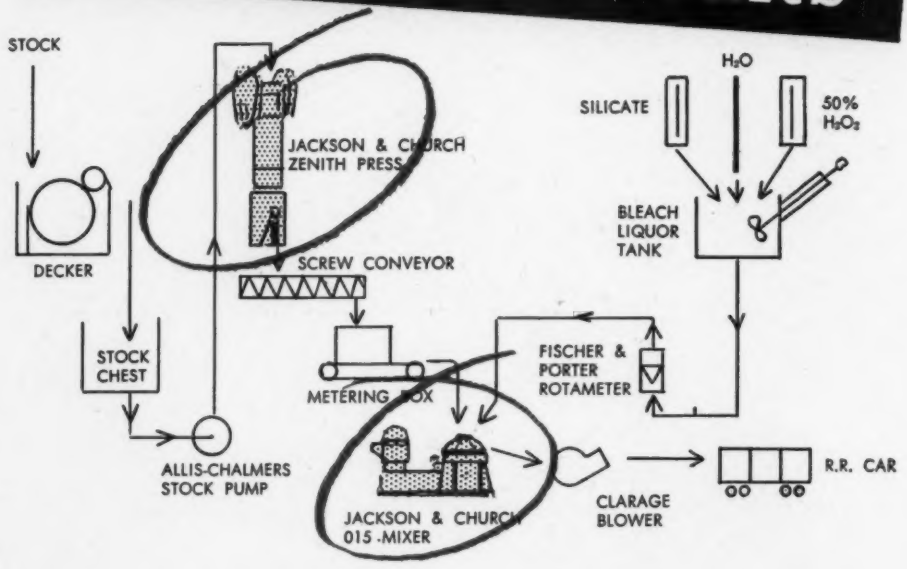
Groundwood Pulp

FIRM: Hoberg Paper Mills, Little Rapids Division

LOCATION: West DePere, Wisconsin

Plant, recently purchased by Hoberg, engages in groundwood pulp bleaching. Efficiency of bleaching operations increased through High Density Bleaching System using J-C Pulp Press and J-C Bleach Mixer. Results successful. Plant now handling 30 tons/day.

formula for results



The experiences of an ever increasing number of pulp mills proves conclusively that the efficiency of bleaching groundwood pulp can be greatly increased.

The Jackson & Church High Density Bleaching System makes possible *the same brightness at lower cost or greater brightness at same cost!*

The market for bleached groundwood pulp is waiting. Let our engineers help you *sell* that market.

J-C Engineers are available for consultation and assistance in developmental work. For application to individual problems, write Dept. P.I.

JACKSON & CHURCH CO. SAGINAW, MICHIGAN

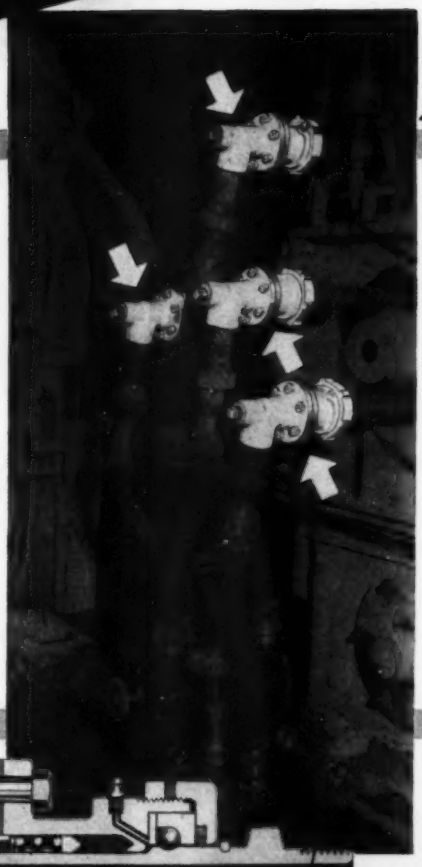
J-C

Work well done since eighty-one

"Your JOINTS really solved a Problem for us!"

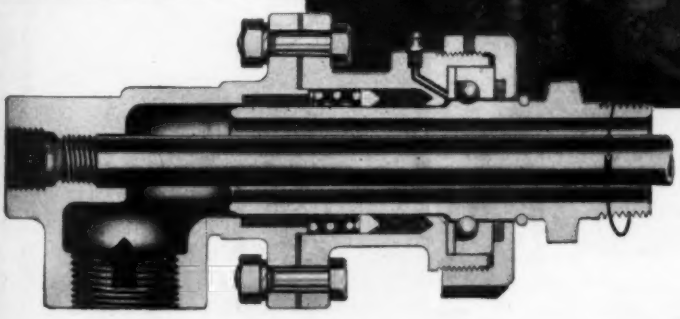
Says MAINTENANCE ENGINEER in this Paper Converting Plant

- Free-Floating, Low Torque Installations.
- Up to 50% Power Savings.
- Better Temperature Control.
- Low Maintenance, No Adjusting.
- All Parts Easily Accessible.



LOW TORQUE (freedom from friction drag) is the key to Barco's *"free-floating"* revolving joint installations. With this type of installation, Barco offers numerous advantages: power savings as high as 50%... very low maintenance requirements... quick, easy accessibility of parts... better temperature control... ability to withstand vibration and hard usage.

Take a look at Barco's new Type IBR Revolving Joint. Note the wide spacing between bearings which holds bearing loads and wear to a minimum. *Let us give you the complete story; ask for recommendations.* BARCO MANUFACTURING CO., 526H Hough Street, Barrington, Ill. (A Chicago Suburb). In Canada: The Holden Co., Ltd.



Left: Ability to stand up under high speed, continuous duty on large and small coating rolls has made these Barco Joints popular with the user.

For complete information on this new Type IBR Revolving Joint, send for Bulletin 300.

BARCO *Revolving* JOINTS

For Paper Machine Dryers, Calenders, Paper Converting Equipment

FREE ENTERPRISE—THE CORNERSTONE OF AMERICAN PROSPERITY

Your best combination for more production-power...

The right motor, a clutch and G&K FLAT LEATHER BELTING

G&K flat leather belts absorb considerable starting torque and load shock. In combination with the right motors and automatic conversion clutches, these belts will give your machines all the power they need when they need it — from a smooth, fast acceleration to the long, steady drive required for full production. And you'll save more money with smaller motors, lower starting current, less maintenance and, of course, the longer life built into a G&K flat leather belt.

Take the first step toward *more production-power* by specifying G&K flat leather belting. Here are three famous brands, each quality-controlled from green hide to finished product:

HEART OAK — Top quality center stock oak leather belting recommended for long-center straight and cross drives and short-center drives with large pulleys.

RESEARCH® — Premium quality leather belting, tanned and curried by an exclusive process. Recommended for small-diameter pulleys, short-center drives, severe idler drives, high-speed drives.

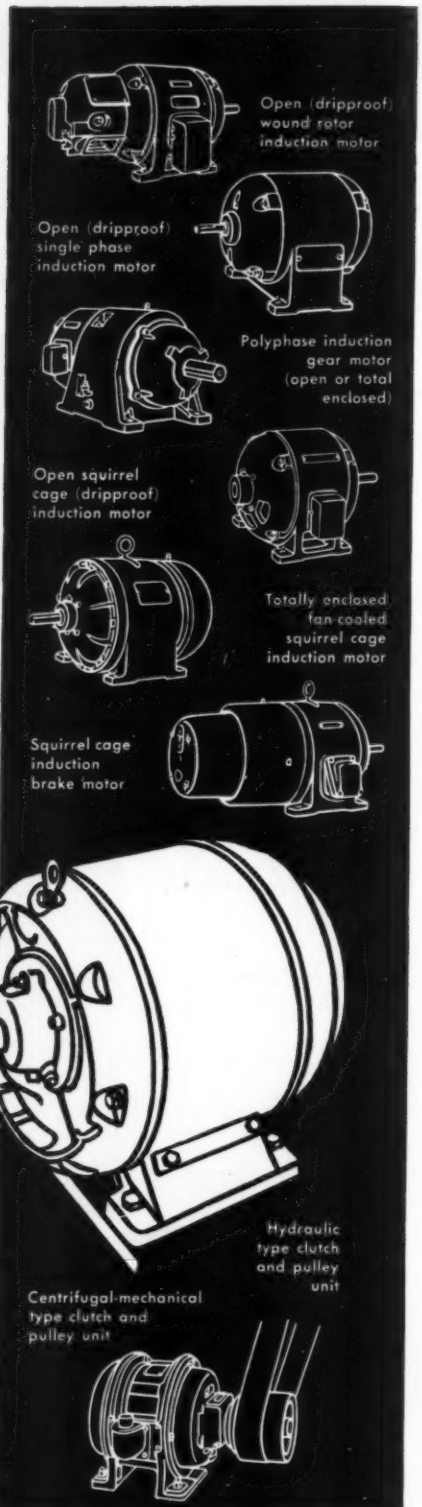
SPARTAN® — A combination tannage that has high resistance to water, steam, oil, acid and alkali fumes. Widely used in paper mills, bleacheries . . .

Free Belt Manual

Belting catalog full of tables and helpful hints that will enable you to get better service from your leather belts. Write for a copy.

GRAKO®
Sprazon
ORIGINAL BELT DRESSING IN A SPRAY CONTAINER

Spray your belts for more power. Famous GRAKO belt dressing is safe, easy and economical for leather, rubber, fabric — flat, round or V belt drives. Order a case from your industrial supplies distributor. Also Grako Liquid in cans and drums. Folder FREE.


Open (drippproof) wound rotor induction motor
Open (drippproof) single phase induction motor
Polyphase induction gear motor (open or total enclosed)
Open squirrel cage (drippproof) induction motor
Totally enclosed fan cooled squirrel cage induction motor
Squirrel cage induction brake motor
Hydraulic type clutch and pulley unit
Centrifugal-mechanical type clutch and pulley unit

Also . . . round, link and V belting, belt lacing, dressings, cements, specialty leathers. Packings — Leather and Rubber. Textile Leathers.

Graton & Knight Company

Worcester 4, Massachusetts

GRATON & KNIGHT

Estab. 1851

World's Largest Manufacturer of Industrial Leather Products

B-4

The Paper Industry

Technology • Engineering • Management • Production

VOLUME 35 • NUMBER 4 • JULY, 1953

Features . . .

Mando puts No. 3 machine into operation 418
Institute dedicates general activities building 424
Rhinelander Paper celebrates golden anniversary 427
Outlook good for remainder of year: Dept. of Commerce 428
Halifax Paper's latest modernization project 446
The Va-Purge process in chemical pulping—a symposium 450
- The Va-Purge impregnation pre-treatment: one solution to the penetration problem 450
  by James H. Ross
- Adaptation of Va-Purge to chemical pulping with conventional equipment 452
  by John S. Hart and R. K. Strapp
- Va-Purge process in straw pulping for corrugating board manufacture 455
  by W. H. Palm and Henry J. Ostrowski
- Applicability of Va-Purge to continuous pulping 458
  by R. K. Strapp

Effective slime control with colloidal silver 459
Job evaluation . . . the installation and administration of a program 460
  by J. A. Keller
Year's progress keynotes Superintendents convention 462

News . . .

News of the Industry 418
Association News 462
Names in the News 469
Necrology 474
Safety News 475

Departments . . .

Editorial 411
Current Comment 413
Financial Reports 414
Paper Sketches 461
Coming Events 466
Patent Reviews 477
Foreign Abstracts 478
New Products 481
New Literature 485
Current Market Quotations 490
Index to Advertisers 492

The PAPER INDUSTRY is indexed regularly in **Engineering Index** and **Industrial Arts Index.** An index to each volume is issued annually by the publisher as a part of the April number.

Copyright 1953, by Fritz Publications, Inc.

Published monthly by:
FRITZ PUBLICATIONS, INC.
Edward B. Fritz (1869-1939), Founder

Publication Staff:

President and General Manager
A. SCOTT DOWD

Vice President and Treasurer
A. C. L. FRITZ

Secretary
A. C. BRUCE

Editorial Director
A. W. J. DYCK, Ph.D.

News Editor
D. W. ZEIGLER

Editorial Assistant
CAROL M. JOHNSON

Sales Manager
R. M. McFARLAND

Production Manager
EDGAR C. FARREN

Circulation Manager
STANLEY E. BOIE

Advertising Representatives:

BOSTON 16: Meade & Company, 471 Statler Building, Liberty 2-9677.

CHICAGO 5: John D. Henderson, 431 South Dearborn Street, Wabash 2-3543.

CLEVELAND: L. M. Perkins, 1199 Dorsh Road, South Euclid 21, Ohio, Evergreen 1-3232.

LOS ANGELES: Murray Bothwell, 234 East Colorado St., Pasadena, Calif., Ryan 1-9155.

NEW YORK 20: L. S. van Nydeck, 9 Rockefeller Plaza, Circle 7-3085.

NEW YORK 25: H. A. Johnston, 945 West End Avenue, Academy 2-6984.

PORTLAND: Murray Bothwell, 234 East Colorado St., Pasadena, Calif., Ryan 1-9155.

SAN FRANCISCO: Murray Bothwell, 234 East Colorado St., Pasadena, Calif., Ryan 1-9155.

THE PAPER INDUSTRY—founded in 1919—known as "The Paper Industry and Paper World" from June, 1939, through December, 1949, assumed its original title with the January, 1950, issue.

Published at 404 North Wesley Avenue, Mount Morris, Illinois.

Address all correspondence intended for publication to Editorial and Executive Office, 431 South Dearborn Street, Chicago 5, Illinois.

Member: Audit Bureau of Circulations, The Associated Business Publications.

Entered as second class matter December 13, 1948, at the post office at Mount Morris, Illinois, under the Act of March 3, 1879.

Subscription rates: United States, U. S. Possessions, and Canada, $3.00 for one year, $5.00 for two years, $6.00 for three years. All other countries, $8.00 for one year, $10.00 for three years, payable in advance in U. S. Funds.

New Digesters replace worn-out units at Champion Mill

The accompanying views show one of three 9-ft. 9-in. diam. by 48-ft. 9½-in. digesters being installed as replacements at the Champion Paper & Fibre Company mill at Canton, North Carolina. They were built by the Chicago Bridge & Iron Company and installed by Champion riggers.

We build digesters for the production of pulp in every pulp mill area of the United States. Write our nearest office for quotations on digesters or other steel plate structures to meet your paper mill needs.

With one end hoisted off the ground and the other on rollers, one of the three 50-ton digesters is moved into the spot where it will be installed. All three of the new digesters were constructed of type A-285 Grade C Firebox quality steel.

A hole was dug to give digester clearance under beams. Within nine days after the old digester started moving out, the new digester shown in the view at left was on the line and in full production.

CHICAGO BRIDGE & IRON COMPANY

Atlanta, 3.....2143 Healey Building
Birmingham, 1.....1511 North 50th Street
Boston, 10.....1026—201 Devonshire Street
Chicago, 4.....2445 McCormick Building
Cleveland, 15.....2267 Midland Building
Detroit, 26.....1566 Lafayette Building
Havana.....402 Abreu Building
Houston, 2.....2143 C & I Life Building
Los Angeles, 17.....1559 General Petroleum Building
New York, 6.....3350—165 Broadway Building
Philadelphia, 3.....1653—1700 Walnut Street Building
Pittsburgh, 19.....3231 Alcoa Building
San Francisco, 4.....1547—200 Bush Street
Seattle, 1.....1327 Henry Building
Tulsa, 3.....1651 Hunt Building

Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA. In Canada: HORTON STEEL WORKS, Limited, FORT ERIE, ONT.

HYDRAULIC-OPERATED

Yarway Digester Blow Valve—one of six installed at large North Carolina paper mill.

TAKE YOUR CHOICE...

MOTOR-OPERATED

Yarway Digester Blow Valve—one of eight installed at large Canadian paper mill.

You can choose between hydraulic-operation and motor-operation when you specify Yarway Digester Blow Valves. Both combine all the following Yarway advantages:

- Remote control, usually from above, on the operating floor.
- Tight shut-off. Effective sealing under full digester pressure. Saves cooking liquor. Insures thorough pulp cooking.
- Free discharge. No pockets. Full discharge with minimum pressure drop. Digester blows clean.
- Rugged construction. Built to withstand shock and wear of toughest service.
- Modern metallurgy—such as sliding plunger of hardened stainless steel and sleeve of chromium nickel—resists wear and chemical action.

For full details, write for Yarway Bulletin B-440.

YARNALL-WARING COMPANY
149 Mermaid Avenue • Philadelphia 18, Pa.
Branch Offices in Principal Cities

YARWAY DIGESTER BLOW VALVES

FOR THE FINEST IN

PULPS

Specify

STRONG CLEAN BRIGHT

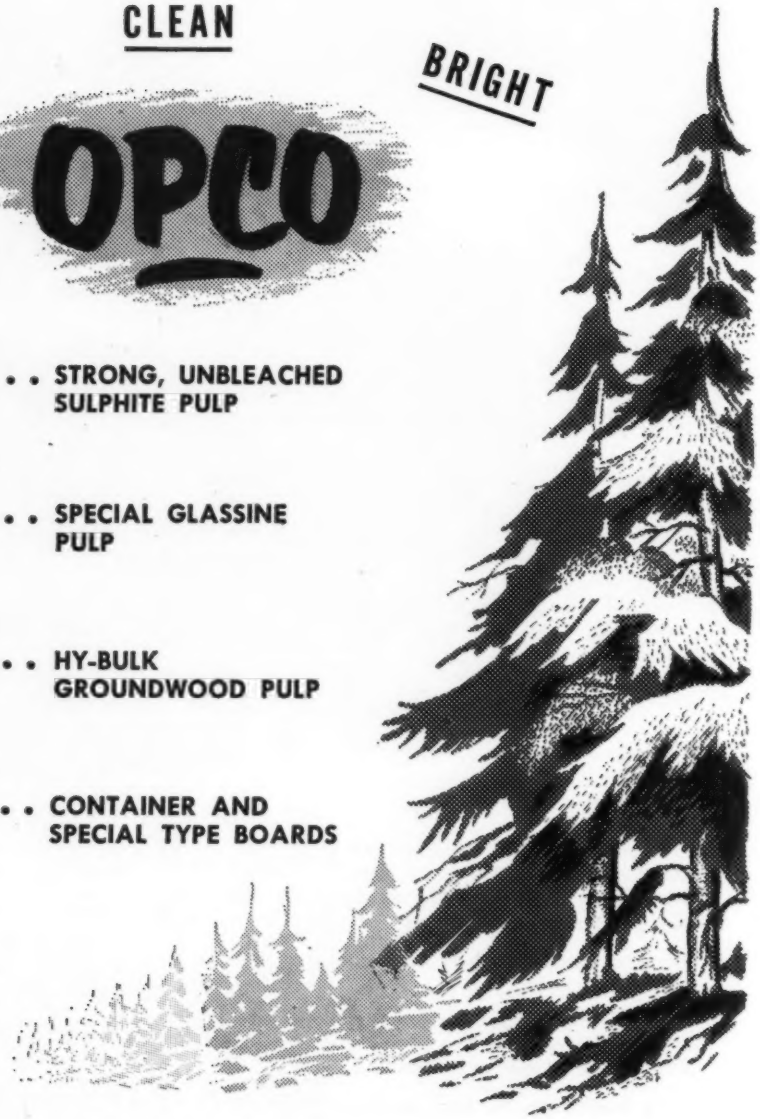
OPCO

OPCO . . . STRONG, UNBLEACHED SULPHITE PULP

OPCO . . . SPECIAL GLASSINE PULP

OPCO . . . HY-BULK GROUNDWOOD PULP

OPCO . . . CONTAINER AND SPECIAL TYPE BOARDS



INQUIRIES INVITED

THE **ONTARIO PAPER CO.** LIMITED

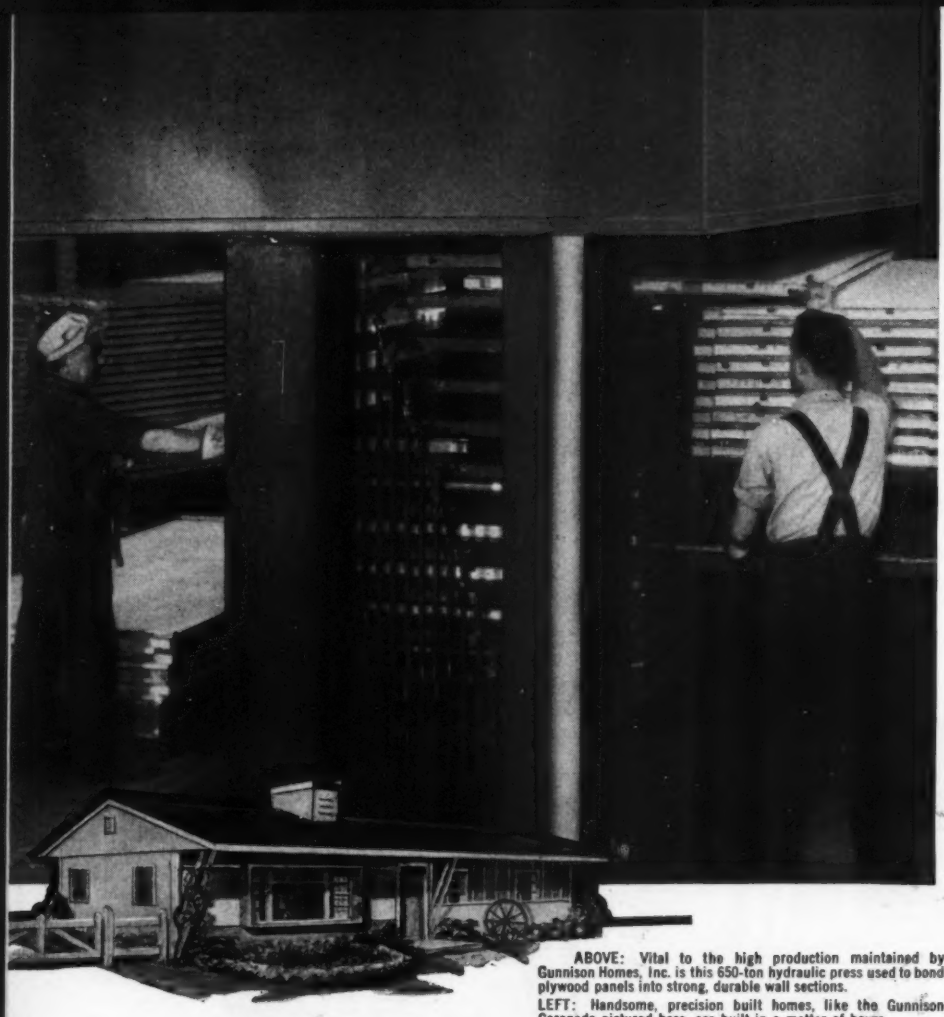
THOROLD • ONTARIO • CANADA

WISCONSIN-MICHIGAN—another in a series of scenes . . . areas where Appleton Wires serve the paper industry.

A SAGA of trees to model T's...that's the romantic story of Wisconsin-Michigan, land of lumberjack lore and birthplace of mass production.

Here is truly an area of vivid contrast, where a vacationist's dreamland of crystal lakes and singing streams stands in the back yard of America's mighty industrial empire. Playing an important role in this drama of productive might are 114 paper mills...most of which know, from long experience, that *Appleton Wires are Good Wires!*

APPLETON WIRE WORKS, INC., APPLETON, WISCONSIN



ABOVE: Vital to the high production maintained by Gunnison Homes, Inc. is this 650-ton hydraulic press used to bond plywood panels into strong, durable wall sections.

LEFT: Handsome, precision built homes, like the Gunnison Coronado pictured here, are built in a matter of hours.

Answers a pressing need for Gunnison Homes, Inc. . . .

● Gunnison Homes, Inc., situated in New Albany, Indiana, is one of the leaders in the field of manufactured homes. Key to continuous production of precision built homes at the New Albany plant is the 650-ton hydraulic press, shown above, which was installed in 1947. This press processes ten plywood panels every cycle by the combination of heat and pressure . . . a tough job and one requiring reliable hydraulic performance to maintain production schedules.

STANOIL
TRADE MARK
Industrial Oil

STANOIL Industrial Oil was installed in the press when it was put into operation six years ago. STANOIL has stood the test of severe operation . . . with no evidence of oil deterioration being found during a recent inspection of the hydraulic system. Operation has been efficient. Minimum make-up oil has been needed to maintain the oil capacity of 450 gallons.

Find how STANOIL can benefit you by discussing this multi-purpose oil with a Standard lubrication specialist. You can contact him by phoning your local Standard Oil office. Or, write: Standard Oil Company, 910 S. Michigan Ave., Chicago 80, Ill.

What's YOUR problem?

Ralph E. Murnahan, of Standard Oil's Evansville office, is the lubrication specialist who keeps in constant contact with Gunnison Homes to make certain that there is no interruption of operation due to lubrication difficulties.

He is one of many lubrication specialists who make their headquarters in Standard's offices throughout the Midwest. These men have been specially trained in Standard's Lubrication Engineering Schools and, in addition, have a wealth of on-the-job experience.

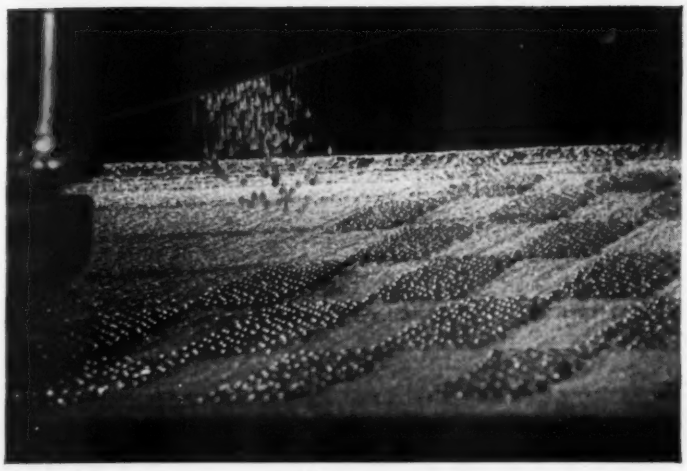
To obtain the service of the lubrication specialist in your area, you need only call your local Standard Oil office. The lubrication specialist will discuss your lubrication problems with you . . . at no obligation to you, of course. He has a complete line of petroleum products to offer you, including:

SUPERLA Greases—Available in a wide range of consistency grades and in both lime-soap and soda-soap types. SUPERLA Greases cover a wide range of operations. These efficient products are comparable in quality with the highest type of special greases.

STANOLITH Greases—Because these unique lithium soap products possess the heat resistant properties of soda-soap greases and the water resistant properties of lime-soap greases, they offer a solution to lubrication problems caused by the presence of both heat and water.

STANDARD OIL COMPANY

STANDARD *(Indiana)*



Just one phase of Swift's exclusive process—the glue liquor falls on a bed of dry finished product and moves through a virtually closed drying system. No chance for contact with contaminating substances.

Attention paper producers!

Only Swift can give you New Process Glue

A product of unexcelled purity and uniformity, New Process Glue is *exclusive* with Swift. Only Swift has the facilities to manufacture this quality glue for paper makers.

In Swift's exclusive process, protein liquor is scientifically extracted from fresh, selected raw material. The concentrated liquor falls in drops on a moving belt of dry glue. Then, by continuous and automatic process, the product is dried, milled and screened. During the entire manufacturing process and in finished form, the product must pass rigid laboratory tests . . . meet a number of chemical and physical requirements.

Uncontaminated by foreign substances—New Process Glue is a clean, light-colored, uniform product.

Here's where Swift's New Process Glue serves the paper producer

● *IN PIGMENT RETENTION* — The flocculating action of New Process Glue promotes high retention of clay and titanium pigments . . . keeps fiber and filler on the wire of the paper machine . . . helps increase the brightness and opacity of filled papers . . . promotes better fiber formation, aiding in the production of a denser, stronger sheet.

● *IN FLOTATION-TYPE SAVEALL SYSTEMS* — New Process Glue helps obtain clearer effluents because of its unusual ability to flock fibers and fillers.

● *IN GETTING HIGHER PICK TEST* — New Process Glue is used as a partial replacement for starch in machine coating. It promotes better film formation and greater tensile strength than a total starch solution.

SWIFT & COMPANY
Adhesive Products Department
Chicago 9, Illinois

Please send your 100-lb. introductory shipment of Swift's New Process Glue at the quantity price, to be tested for use in our operations. We understand, if not fully satisfactory, it may be returned for credit at your expense.

Name _____ *Title* _____

Firm Name _____

Address _____

City _____ *Zone* ____ *State* _____

This offer expires August 31, 1953

Call **SWIFT** first for **GLUES**

A New Industry Comes to America

In the late 1860's, with newer, better, faster machines, and with plentiful wood pulp in prospect to feed them, the paper industry boomed. Still the essential papermakers' felts were largely imported from England. Pioneers set about to supply the urgent need—American-made felts for America's multiplying paper mills.

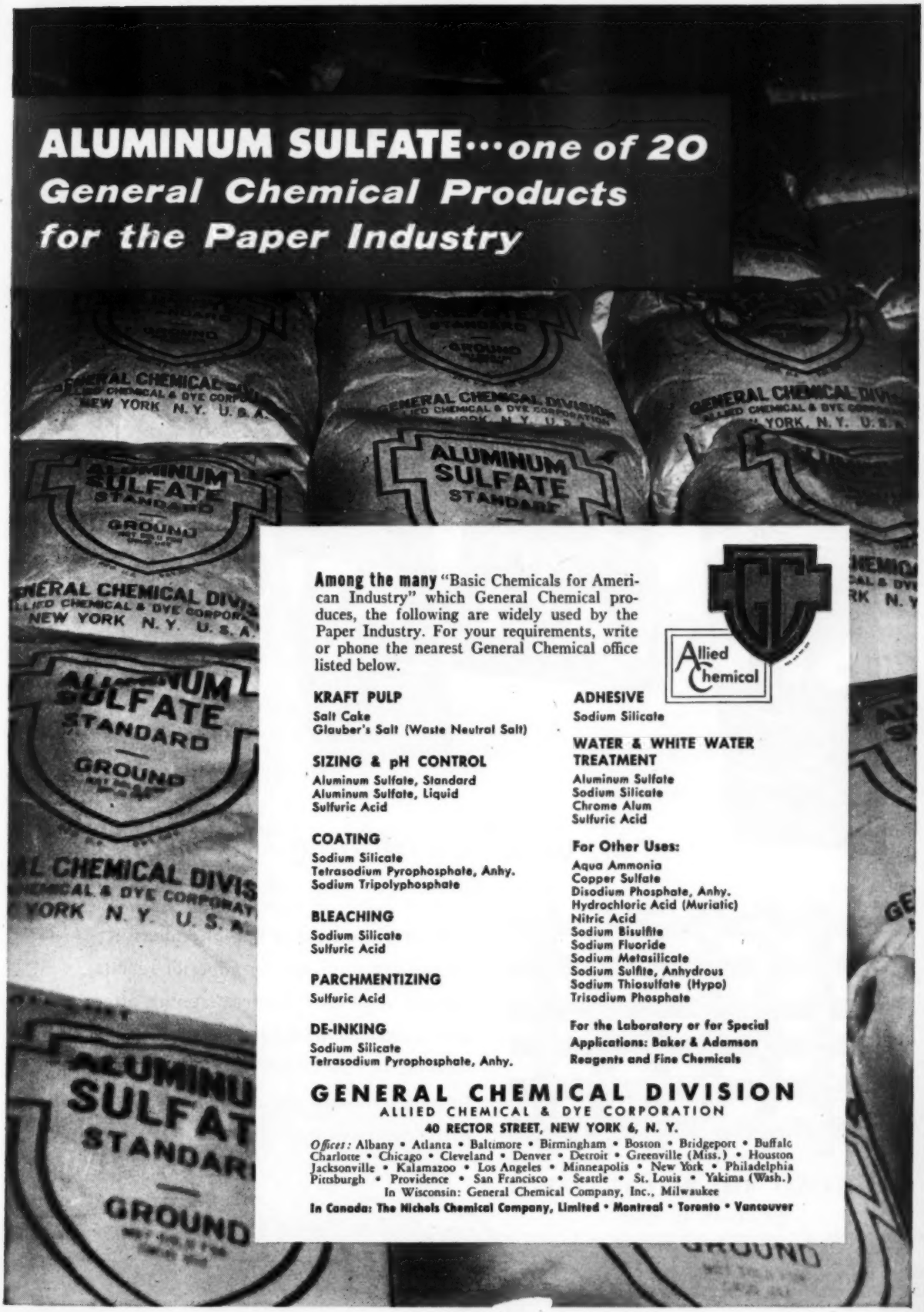
Among the first of the American feltweaving mills was one now known as F. C. Huyck & Sons. Established in 1870 in the village of Rensselaerville, New York, it has grown to be one of the largest manufacturers of papermakers' felts in the world. It has cooperated closely with the papermakers, designing and producing felts to run at greater speeds, remove water in greater volume, provide new finishes for new types of paper.

HUYCK FELTS

KENWOOD TEXTILE PRODUCTS

F. C. HUYCK & SONS • ESTABLISHED 1870 • RENSSELAER, NEW YORK

ALUMINUM SULFATE···one of 20 General Chemical Products for the Paper Industry



Among the many "Basic Chemicals for American Industry" which General Chemical produces, the following are widely used by the Paper Industry. For your requirements, write or phone the nearest General Chemical office listed below.

Allied Chemical

KRAFT PULP
Salt Cake
Glauber's Salt (Waste Neutral Salt)

SIZING & pH CONTROL
Aluminum Sulfate, Standard
Aluminum Sulfate, Liquid
Sulfuric Acid

COATING
Sodium Silicate
Tetrasodium Pyrophosphate, Anhy.
Sodium Tripolyphosphate

BLEACHING
Sodium Silicate
Sulfuric Acid

PARCHMENTIZING
Sulfuric Acid

DE-INKING
Sodium Silicate
Tetrasodium Pyrophosphate, Anhy.

ADHESIVE
Sodium Silicate

WATER & WHITE WATER TREATMENT
Aluminum Sulfate
Sodium Silicate
Chrome Alum
Sulfuric Acid

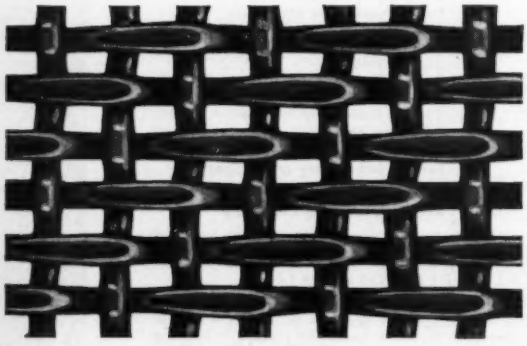
For Other Uses:
Aqua Ammonia
Copper Sulfate
Disodium Phosphate, Anhy.
Hydrochloric Acid (Muriatic)
Nitric Acid
Sodium Bisulfite
Sodium Fluoride
Sodium Metasilicate
Sodium Sulfite, Anhydrous
Sodium Thiosulfate (Hypo)
Trisodium Phosphate

For the Laboratory or for Special Applications: Baker & Adamson Reagents and Fine Chemicals

GENERAL CHEMICAL DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 RECTOR STREET, NEW YORK 6, N. Y.

Offices: Albany • Atlanta • Baltimore • Birmingham • Boston • Bridgeport • Buffalo • Charlotte • Chicago • Cleveland • Denver • Detroit • Greenville (Miss.) • Houston • Jacksonville • Kalamazoo • Los Angeles • Minneapolis • New York • Philadelphia • Pittsburgh • Providence • San Francisco • Seattle • St. Louis • Yakima (Wash.)
In Wisconsin: General Chemical Company, Inc., Milwaukee
In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver

-it always means the best



Whatever the field or line of endeavor, specialization makes for superior results. Always, *since* 1903, Lindsay's entire attention and resources have been devoted to the weaving of Fourdrinier wire cloth for one purpose – *the manufacture of better paper and paper products.*

THE LINDSAY WIRE WEAVING COMPANY
CLEVELAND 10, OHIO

Lindsay **WIRES**
FOR PAPER MILLS

Let Layne help you

Plan ahead for water needs

How Layne Can Help You—Water needs require long-range plans—for safety, dependability, economy, maintenance of adequate supply. In all such plans, Layne's engineering skill and unique research facilities are at your service.

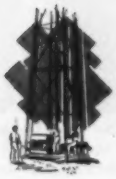
Exploration — Layne's unmatched experience and technical ability assure an accurate "pin-pointing" of water-bearing formations before actual drilling begins.

Test Wells—Expert crews drill test holes on the site and remove samples to be sent to Layne's central laboratories for study.

Analyses—Exhaustive studies are made to determine rate of flow . . . chemical content of water . . . nature of earth formations. Guesswork is removed from your planning.

Recommendations—From all data, Layne recommends an overall plan for the best development or expansion of a water system geared to your situation and needs.

Undivided Responsibility



Specify a 100% Layne Well Water System

In a Layne water system, the name of the world's most experienced water developer stands behind everything—engineering, labor, wells, casings, screens, pumps. One contract assures you the finest in men and materials—and an undivided responsibility that assures your water supply.

Layne Associate Companies Throughout the World

Layne

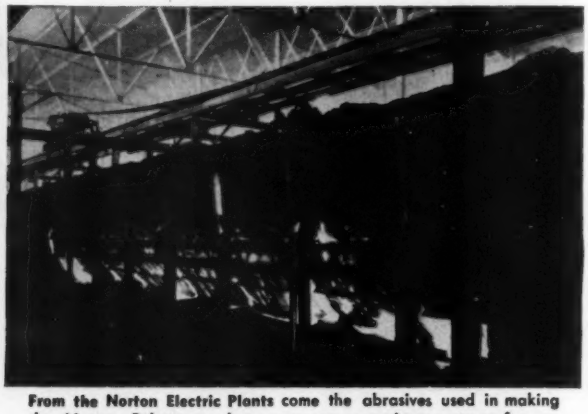
■ For Layne's catalog on Well Water Systems or other information, see your nearest Layne Associate Company or write to Layne & Bowler, Inc., General Offices, Memphis 8, Tenn.

Water Wells • Vertical Turbine Pumps • Water Treatment

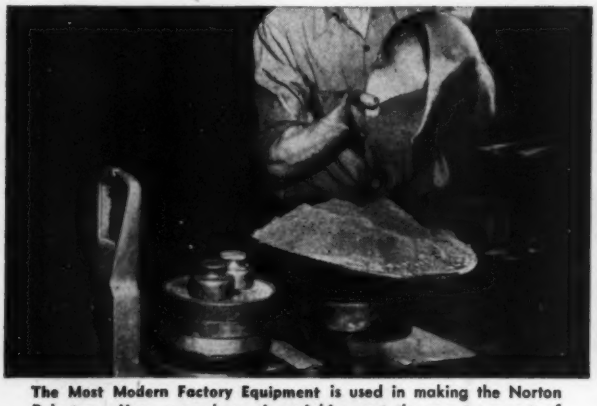
It's a Manufactured Pulpstone...

Precision Manufactured to Meet Your Requirements

The Norton Research Laboratories play an important part — not only in continually improving the Norton Pulpstone but in the routine checking of materials quality.



From the Norton Electric Plants come the abrasives used in making the Norton Pulpstone — here you see a resistance type furnace producing CRYSTOLON abrasive.



The Most Modern Factory Equipment is used in making the Norton Pulpstone. Here a workman is weighing out the exact amount of abrasive and bond required for molding a segment.

Final Assembly of the Molded Segments is done by workmen long skilled in this exacting job. This is followed by careful truing of the completed stone in a gigantic lathe.

THE Norton Pulpstone is not an "artificial" stone — it is a real precision *manufactured* pulpstone — carefully engineered to meet your special requirements. First the abrasive is *manufactured* in the Norton electric furnace plant — from bauxite ore if it is an ALUNDUM stone or from silica sand and metallurgical coke if it is CRYSTOLON stone.

Then in the mile-long Norton Worcester plant, the world's largest grinding wheel plant, the abrasive is mixed with suitable bonds and molded into segments. After being kiln-fired the segments are assembled to form the final stone. Every step in the manufacturing process is under careful quality control and every element in your stone is exactly tailored to meet your particular requirements.

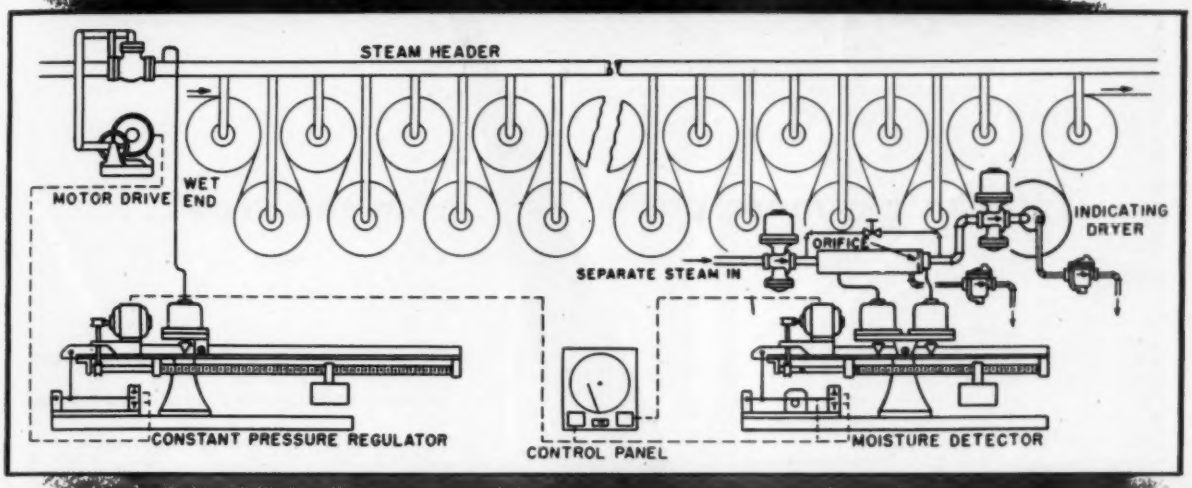
NORTON COMPANY, WORCESTER 6, MASS.

Norton Company of Canada, Ltd., Hamilton, Ontario

Making better products . . . to make other products better

Abrasives - Grinding Wheels - Grinding and Lapping Machines - Refractories - Porous Mediums - Non-slip Floors - Norbide Products

HERE IS A *MOISTURE CONTROL* THAT REALLY WORKS...



ARMSTRONG MOISTURE CONTROL FOR PAPER MACHINES

Automatically holds very uniform moisture in either board or fine paper.

●

Acts on average moisture content across entire sheet to avoid over-control due to wet spots.

●

Sensitive . . . Responsive —steam pressure may be varied as little as 1 lb/hr or as much as 1½ lb/min, depending on variations in the sheet.

●

Ruggedly constructed for long, trouble-free service.

●

Makes possible higher average moisture and uniform quality.

THE Armstrong Moisture Control utilizes an *indicating dryer* to measure the moisture in the sheet. Moisture changes are acted upon by a Moisture Detector, which controls a Main Pressure Regulator to vary steam pressure on all dryers except the indicating dryer. It is simple in principle and remarkably sensitive to slight changes of moisture in the sheet.

Thoroughly proven in mill service, the Armstrong Control is *fully guaranteed* to satisfy. Use the handy coupon below to find out more about "the Moisture Control that Really Works".

ARMSTRONG MACHINE WORKS
816 Hoffman Street, Three Rivers, Michigan

SEND FOR NEW BULLETIN

ARMSTRONG MACHINE WORKS
816 Hoffman Street • Three Rivers, Michigan

Please send new Moisture Control Bulletin to:

NAME _____
Please Print

COMPANY _____

STREET ADDRESS _____

CITY _____ STATE _____

MOISTURE CONTROL... INDIVIDUAL DRYER TEMPERATURE CONTROL ... DRYER DRAINAGE TRAPS ... STEAM HUMIDIFIERS

You can get more paper from this tree . . .

Armour glue and the Sveen system assure maximum retention of fine fibers, fillers and pigments

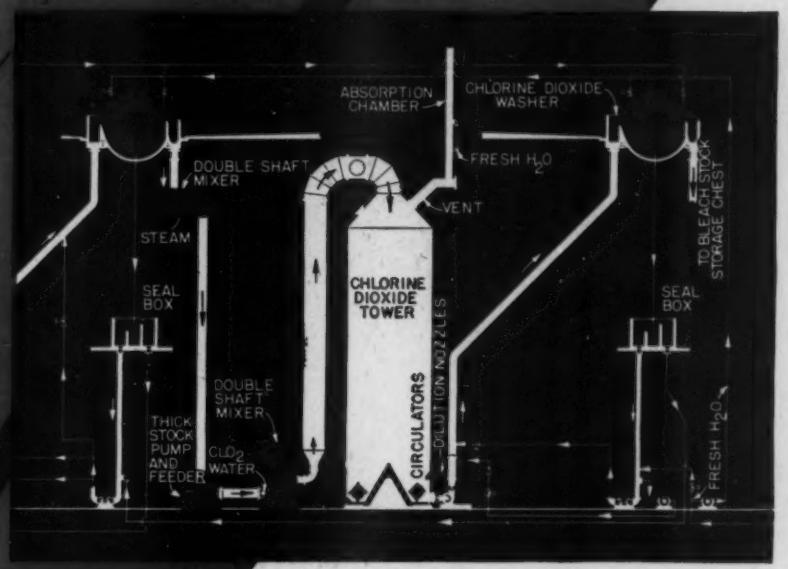
The Sveen process uses chemically modified glue solutions added to the stock to increase retention of fine fibers and fillers. Another advantage is a possible 50% reduction in the remaining solids in the white water, so this system reduces the separation required of mechanical save-alls or sedimentation-type recovery systems. For these reasons, and the economies they represent, the Sveen system is becoming increasingly popular.

Armour offers two outstanding glues for this application. BC high jelly strength Special Hide Glue is an accepted standard for the process. And Armour CX Special Bone Glue is a medium jelly strength dry glue, lower in price. Both are outstanding colloidal flocculents, and the choice between them should depend on local conditions. Our Technical Sales Service Department will gladly work with you to determine the most efficient, economical glue for your operation.

These are only two of Armour's adhesives for the paper industry. Our clear chrome hide glue is extensively used for surface or tub sizing of rag bond paper. We have other glues for "on machine" creping directly from the Yankee Dryer that supply the tacking properties necessary for softness in paper tissues. Write Armour today for complete information, including prices, on this line of glues for paper making.

ARMOUR *Adhesive Division*

Armour and Company • 1355 W. 31st Street • Chicago 9, Ill.
Delaware and Spring Garden Streets • Philadelphia 23, Penn.
50 Farnsworth Street • Boston 10, Massachusetts
120 Broadway • New York 5, New York
2501 83rd Street • North Bergen, New Jersey



GET THROUGH...

THE "BARRIER EFFECT" TO 90 G.E. BRIGHTNESS

IMPCO SINGLE STAGE CHLORINE DIOXIDE BLEACHING SYSTEM

The use of chlorine dioxide in pulp bleaching is now commercially practical and new methods of generating this oxidizing agent make its use available to anyone.

Impco has incorporated into a single stage of ClO_2 desirable features, namely, the thick stock pump, the double shaft mixer, and a pressure reaction bleaching tower — which give results unobtainable in ordinary types of high density towers.

We welcome the opportunity to work with you on your bleaching project.

- **Highest Brightness**
- **Excellent Pulp Quality**
- **No Strength Loss**
- **Low Chemical Costs**
- **Reduced Pulp Shrinkage**
- **Lower Solids to Sewer**
- **Fits Any Existing System**

IMPROVED MACHINERY INC.

NASHUA, NEW HAMPSHIRE

Sherbrooke Machineries Limited, Sherbrooke, Quebec, manufacture similar equipment in Canada.

J-33

A SPECIALIZED SERVICE *to the* PAPER INDUSTRY

BACKED BY OVER 70 YEARS EXPERIENCE

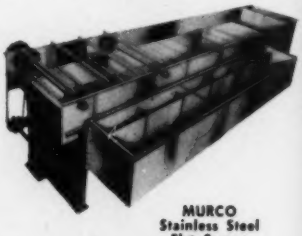
Engineering-
Pattern Making
Modern Machine Shop and Foundry Operations

To the paper industry we offer a specialized service including engineering, pattern making, modern machine shop facilities and foundry operations — all top quality because of our over 70 years' close association with the needs of paper manufacturers. No obligation for complete details and engineering recommendations.

MURCO Multiple Knife Wood Chipper

MURCO Multiple Knife Discs

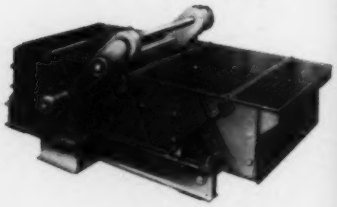
MURCO Knot Drill



MURCO Stainless Steel Flat Screen

MURCO Portable Wood Chipper

MURCO Barking Drum



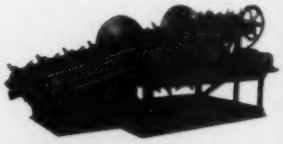
MURCO Level Vibrating Double Deck Chip Screen

MURCO Rechipper

MURCO "V" Type Spout For Pulpwood Chippers

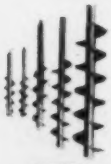
MURCO Quick Opening Gate Valves

MURCO Stainless Steel Pipes and Fittings



MURCO Pulp Wood Slasher

MURCO Chip Crusher

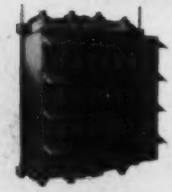


MURCO Screw Conveyors and Flights

MURCO Hydraulic Roll Lowering Table

MURCO Roll Heading Machine

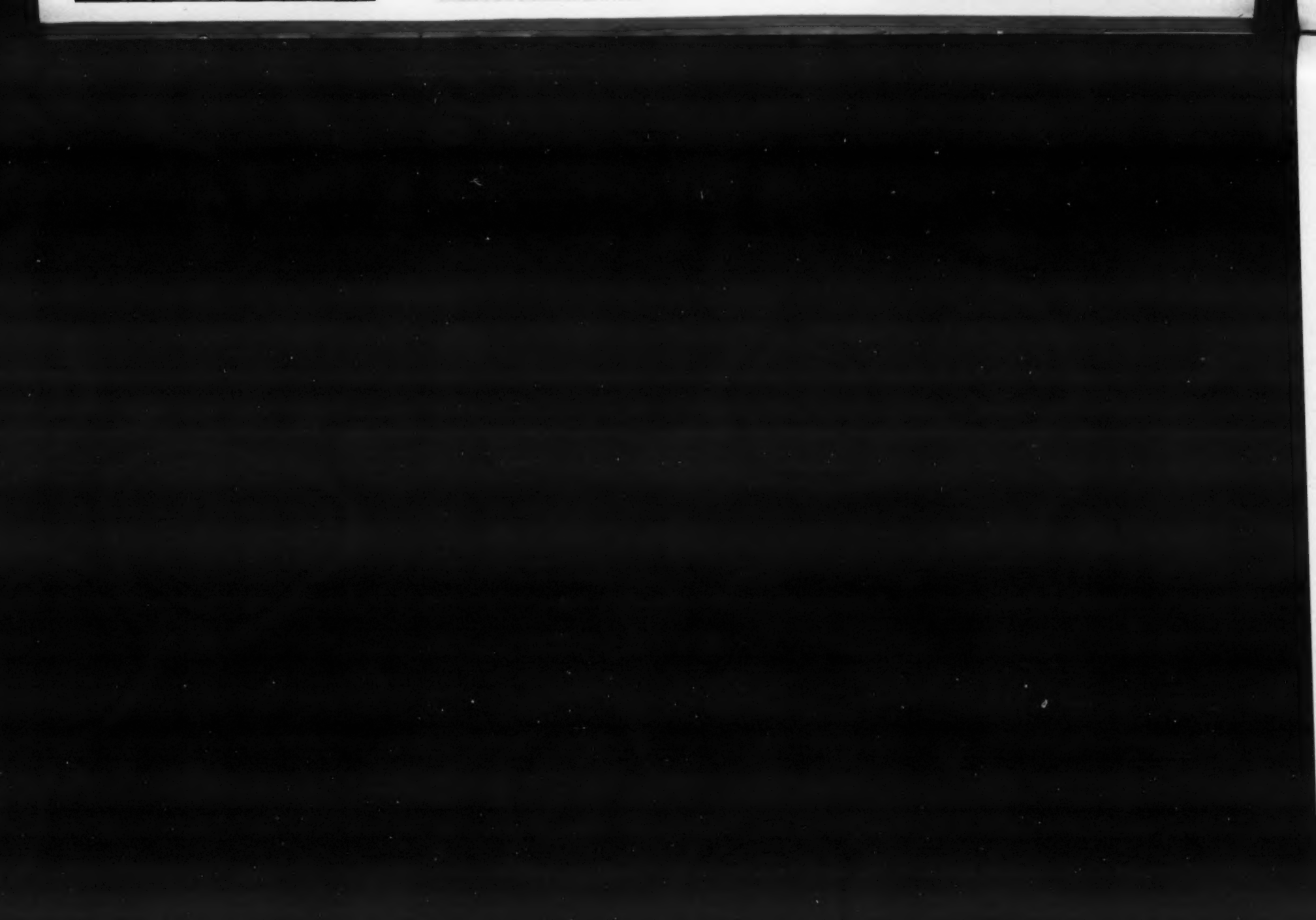
MURCO Collard Windershafts

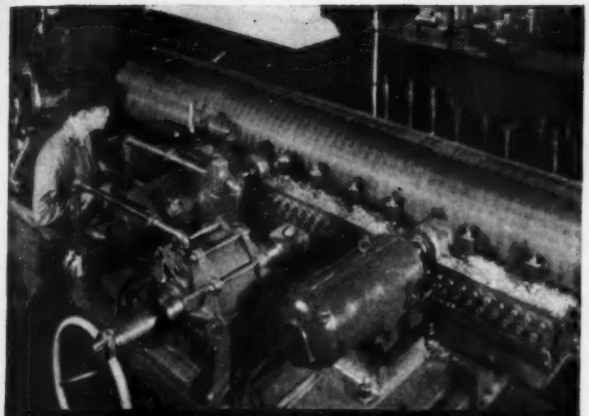


Grid UNIT HEATERS AND BLAST COILS

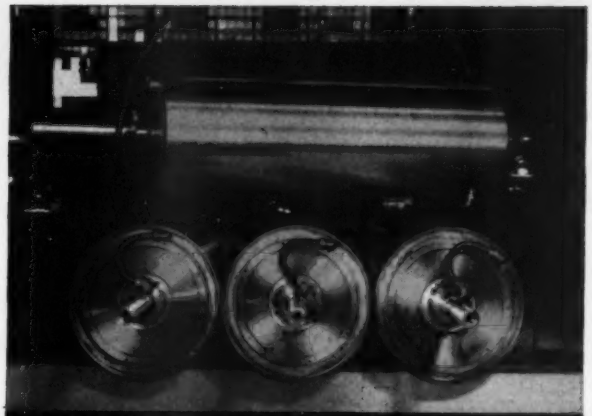
For heating, drying and processing equipment, GRID cast iron construction assures trouble-free service . . . one piece construction high test cast iron heating sections . . . no soldered, brazed or welded sections . . . no electrolysis to cause corrosions, breakdowns, leaks or heating failures . . . may be used on steam pressures up to 250 lbs. Send for catalog, engineering data and capacity tables.

D. J. MURRAY MANUFACTURING CO.
MANUFACTURERS SINCE 1883
WAUSAU • WISCONSIN





Centrifugally cast bronze suction press roll shell being drilled on special machine developed by Shenango.



Bronze cooling drums, each with brazed-in spacers and heads and with steel journals.

Why it pays to Specify Shenango

BECAUSE of Shenango's centrifugal casting process and high precision machine work, Shenango-made rolls and roll assemblies give better service, last longer and save you dollars. Centrifugal casting provides stronger, pressure-dense metal, finer, more uniform grain and freedom from sand inclusions, blowholes and other weakening defects.

Shown on this page are only a few of the many types of rolls, roll cores, drums and assemblies produced in bronzes and Meehanite Metal by Shenango for use in the paper industry.

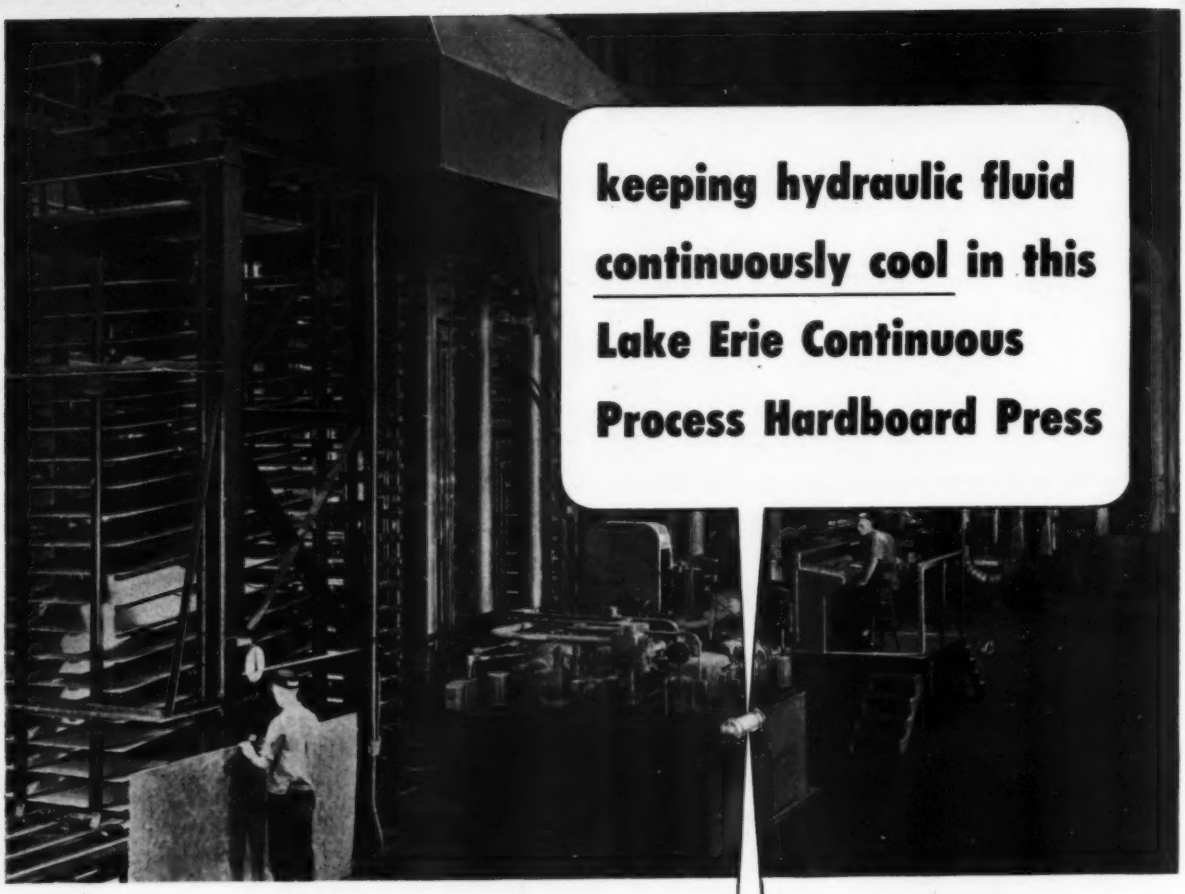
It will pay you to specify Shenango. For further information or data on meeting your specific needs, write to: Shenango-Penn Mold Company, Centrifugal Castings Division, Dover, Ohio (*Executive Offices: Pittsburgh, Pa.*).

SHENANGO

ALL RED BRONZES • MANGANESE BRONZES • ALUMINUM BRONZES
MONEL METAL • NI-RESIST • MEEHANITE® METAL

Stretch beam rolls (for Fourdrinier wire cloth) produced by Shenango in centrifugally cast Meehanite Metal.

Bronze breast roll with steel inserts, centrifugally cast, finished and assembled in the modern Shenango shops.



keeping hydraulic fluid continuously cool in this Lake Erie Continuous Process Hardboard Press

...A ROSS EXCHANGER

On the job in Anacortes Veneer's Hardboard Plant, this 1950 ton Lake Erie Press transforms 20 thick, fluffy pulp fibre mats into thin, flexible hardboard sheets between its 54" x 102" steam plates . . . every 8 to 12 minutes.

To prevent overheating of hydraulic fluid, which could rob press capacity through pump slippage, Lake Erie Engineering Corporation has furnished a Ross Type BCF Exchanger. Most effective operating temperature is thereby assured . . . and production rates are safeguarded.

Similarly, other equipment and machinery manufacturers are providing paper and pulp industries with the dependable temperature protection of Ross Exchangers: on calenders, super calenders, paper making machines, paper machine dryers, pulpwood grinders, rewinders, turbine drives, engines and compressors — *for cooling lube oil, jacket water, hydraulic fluid.*

The wide range of pre-engineered, fully standardized Ross Type BCF Exchangers readily meets most requirements. Their enduring copper and copper alloy materials and extremely rugged construction guarantee the utmost in dependability.

More information is in Bulletin 1.1K5. Write for your copy.

KEWANEE-ROSS CORPORATION
DIVISION OF AMERICAN RADIATOR & STANDARD SANITARY CORPORATION
1430 WEST AVENUE • BUFFALO 13, N. Y.
In Canada: Kewanee-Ross of Canada Limited, Toronto 5, Ont.

Serving home and industry: AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS & WALL TILE • DETROIT CONTROLS • KEWANEE BOILERS • ROSS EXCHANGERS

NEW, Power-Packed AND READY TO GO!

NEW U-1091 natural gas power unit develops 187 net h.p. at 1400 rated r.p.m.; 200 net h.p. at 1600 max. r.p.m.; maximum torque, 820 lbs. ft. @ 800 r.p.m.

NEW U-450—102 net horsepower at 1800 rated r.p.m.; 110 @ 2200 r.p.m.; maximum torque, 324 lbs. ft. @ 1200 r.p.m.

NEW U-406—91 net horsepower at 1800 rated r.p.m.; 98 @ 2200 r.p.m.; maximum torque, 279 lbs. ft. @ 1200 r.p.m.

NEW U-372—83 net horsepower at 1800 rated r.p.m.; 91.5 @ 2200 r.p.m.; maximum torque, 263 lbs. ft. @ 1200 r.p.m.

NEW U-269—62 net horsepower at 1800 rated r.p.m.; 72 @ 2400 r.p.m.; maximum torque, 191 lbs. ft. @ 1200 r.p.m.

NEW U-240—55 net horsepower at 1800 rated r.p.m.; 64 @ 2400 r.p.m.; maximum torque, 168 lbs. ft. @ 1200 r.p.m.

NEW U-220—50.5 net horsepower at 1800 rated r.p.m; 62 @ 2400 r.p.m.; maximum torque, 151 lbs. ft. @ 1200 r.p.m.

IH Announces Seven New International Engines

Seven new six-cylinder, carbureted, valve-in-head engines have been added to the International line, which now includes 18 models—diesel, gasoline or gas—ranging from 16.5 to 200 net horsepower.

These new models are the result of more than 45 years of IH engineering and manufacturing experience building a complete line of heavy duty engines for tractors, trucks, construction and oil field equipment and individual power unit applications.

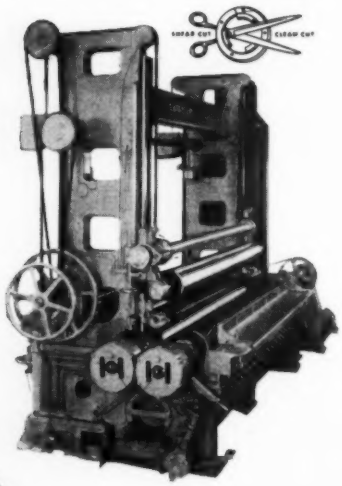
These new units have the durability, flexibility and economy to meet your requirements for lower cost performance. The unmatched network of IH district offices, parts depots, distributors and dealers puts complete service facilities practically at your door.

If you are an individual user of engines, it will pay you to see your nearest International Industrial Distributor or Power Unit Dealer for more complete information. If you are a manufacturer, your nearest IH district office will be glad to help you engineer these engines into the equipment you are building.

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILL.

POWER THAT PAYS — **INTERNATIONAL**

LANGSTON
Slitters and Winders



Designed for very heavy duty work in widths from 92" and up, Langston's "DA" Slitter and Winder produces top quality rolls at speeds up to 3500 feet per minute. Ask for Bulletin #204 describing other sizes.

SAMUEL M. LANGSTON CO.
Camden 4, N. J.

When Papermaking Was the Newest Industry Under the Sun...

In the second century after Christ, when papermaking was in its infancy, macerated fibers in liquid form were poured on cloth moulds and placed in the sun to dry. The fiber was stripped from the mould after it was completely dry . . . and thus a sheet of paper was made. In America, modern high-speed machines have taken the place of ancient papermaking methods. And for more than 30 years A. E. Staley Manufacturing Company has served the progressive American paper industry, supplying high-grade raw materials to the nation's leading mills. Staley products and expert assistance can improve *your* business. Contact your supplier or write direct for details.

Quality Staley Products for Papermakers

Staley Sizing Starches
A full range of starches and dextrins for beater, surface or calender sizing.

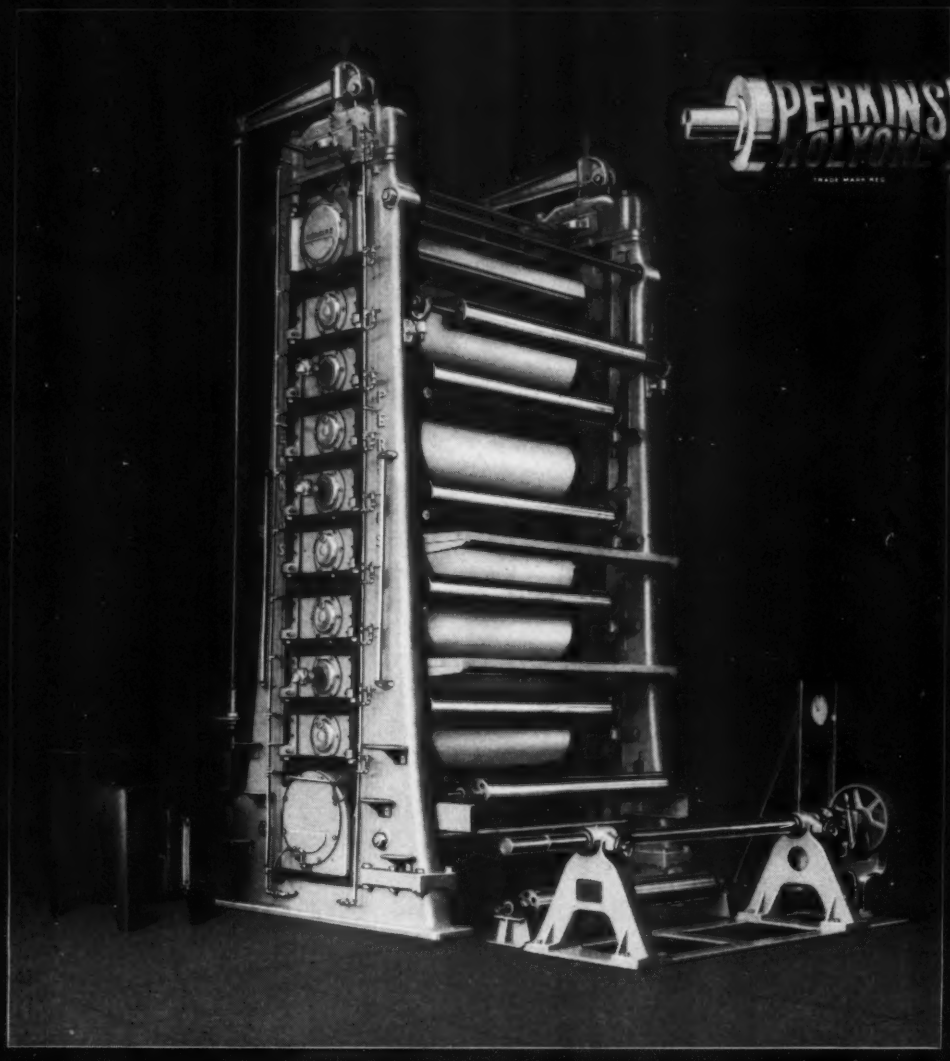
Staley Corrugating and Laminating Adhesives
Corrugating starches, special laminating and bag adhesives.

Staley Coating Adhesives
Starches and Dextrins give better results for machine or regular brush coating.

Staley Plasticizers
"Sweetose" and Staley's corn syrup are ideal softening agents for glassine paper.

PRODUCTS FROM CORN
Staley's

A. E. Staley Mfg. Company, Decatur, Ill.



PERKINS ten-roll 74" Web Supercalender. All rolls in Timken anti-friction bearings. Forced feed oil lubrication to all bearings, with oil pumps. Foxboro air-pressure system. Motor lift for separating rolls. PERKINS CALENDERS are noted throughout the industry for remarkable endurance. . . . They are running steadily, even under the most severe operating conditions, with utmost in power economy.

B. F. PERKINS & SON, Inc.

HOLYOKE, MASS., U.S.A.

LARGEST MANUFACTURERS OF CALENDER ROLLS IN THE WORLD

FISHER®

Announces

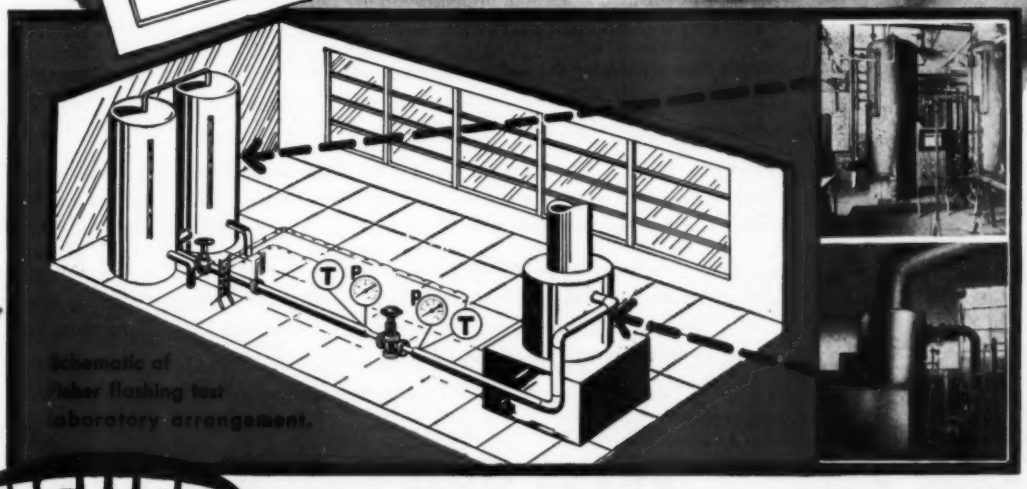
A NEW FACTUAL METHOD OF SIZING CONTROL VALVES FOR FLASHING CONDENSATE SERVICE

This new simplified valve sizing procedure is based on over 7,000 man hours of actual laboratory test data utilizing modern testing and measuring methods.

TECHNICAL PAPER TELLS THE STORY

Write for your copy today

FISHER GOVERNOR COMPANY • Marshalltown, Iowa

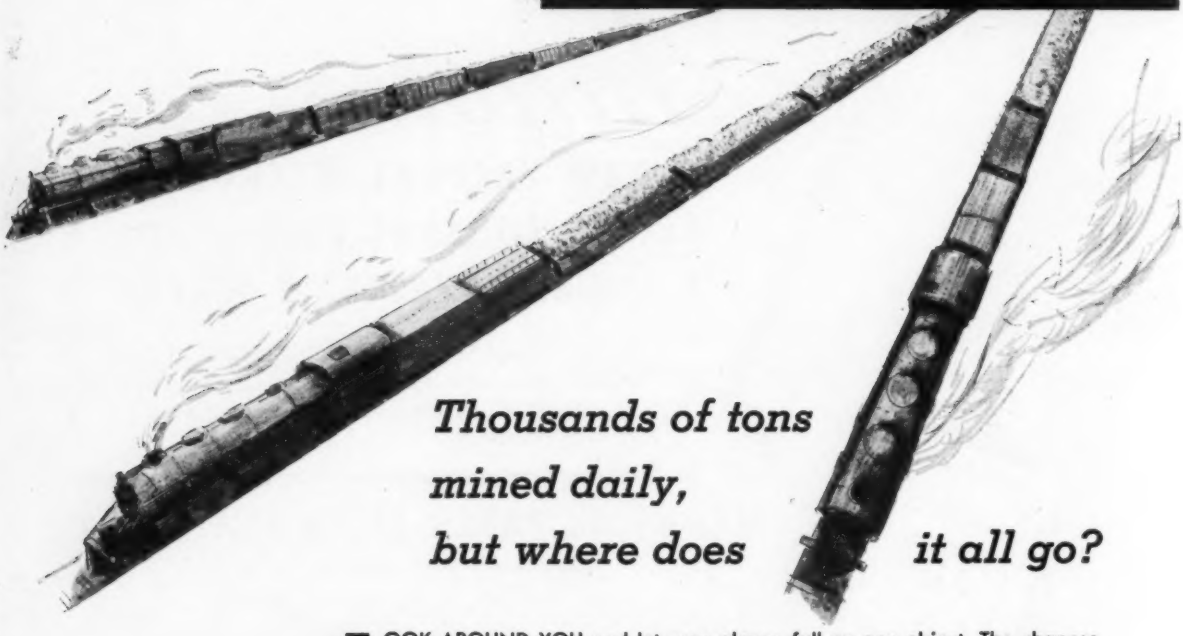


Schematic of Fisher flashing test laboratory arrangement.

FISHER®

WORLD LEADER IN RESEARCH FOR BETTER PRESSURE AND LIQUID LEVEL CONTROL

Sulphur



Thousands of tons mined daily, but where does it all go?

LOOK AROUND YOU and let your glance fall on any object. The chances are 1000 to 1 that sulphur played an important role in its manufacture, either as a component part of the finished product or as a processing element.

Take, for example, the very magazine you are reading. If it's average size it weighs about 1 pound. Made largely of sulphite pulp it required about 0.1 pounds of sulphur in its manufacture.

Multiply this 0.1 pounds of sulphur by the thousands of magazines turned out every day and you'll get some idea of the tremendous tonnage of sulphur required for this *single* division of industry . . . the sulphite pulp manufacture.

Sulphur has long been called One of the Four Pillars of Industry. Today's need emphasizes this fact more than ever. Sulphur producers are making every effort to get maximum production from existing mines and to develop new sources of sulphur as quickly as possible.

Texas Gulf Sulphur Co.

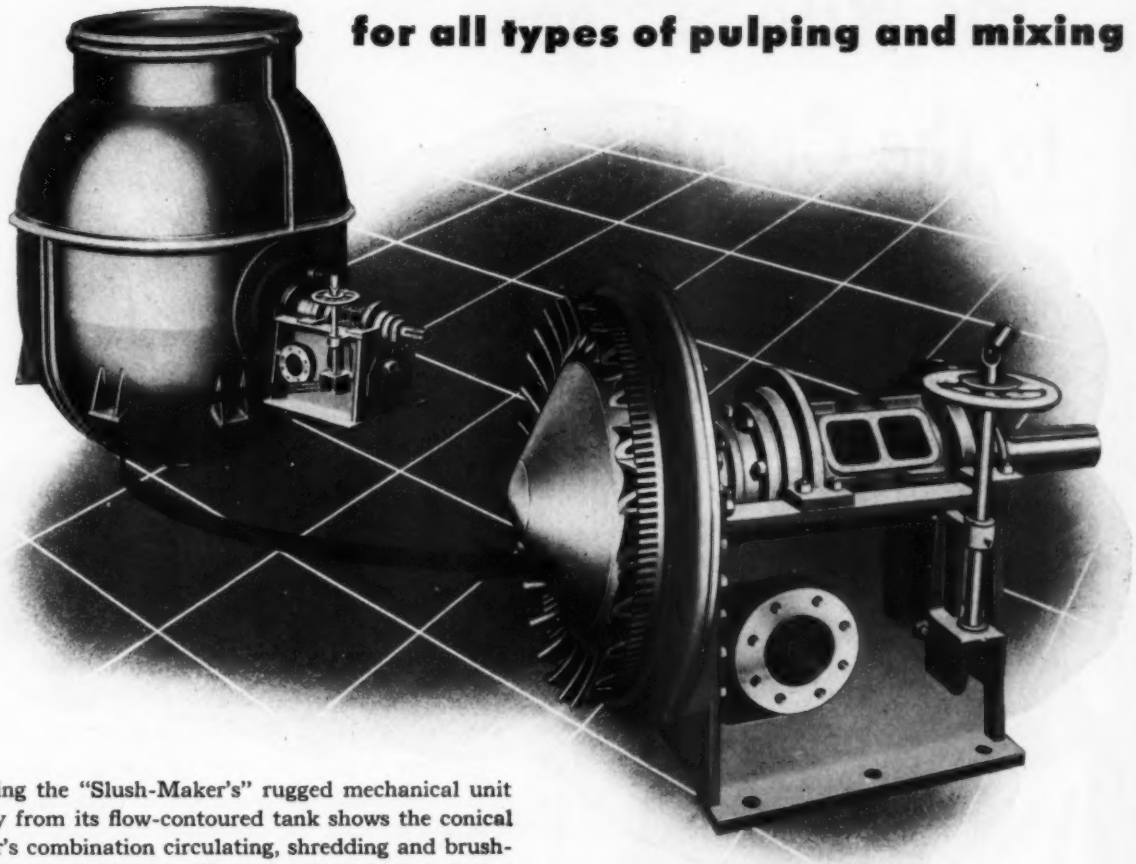
75 East 45th Street, New York 17, N. Y.

Mines: Newgulf and Moss Bluff, Texas

Morden-ize

WITH A Morden "SLUSH-MAKER"

for all types of pulping and mixing



Pulling the "Slush-Maker's" rugged mechanical unit away from its flow-contoured tank shows the conical rotor's combination circulating, shredding and brushing blades, and bars on the stationary attritioning ring

Rapid initial disintegration is given by the rotor's shredding blades.

The positive-flow circulation, across the rotor's face, continually directs the partially broken material at right angles against the bed plate ring.

A hand wheel controlled setting of the rotor assembly can bring the bars on the back of the rotor blades into a brushing contact with the bars on the bed plate ring. This bar-to-bar brushing, when required, will quickly and completely clear all flakes and bundles—even high wet strength—without damage to the fibers.

The Morden "Slush-Maker" also thoroughly mixes and brushes in color, size and other materials in a matter of seconds.

The "Slush-Maker's" side mounted rotor quickly and efficiently slushes full charges of pulp, broke or waste paper, either batch or continuous.

Let us know your slushing requirements and we will gladly analyze how you can Morden-ize your pulping and mixing advantageously.

MORDEN
STOCK PREPARATION EQUIPMENT
MACHINES COMPANY

Corbett Building, Portland, Ore.

HAM FELTZ says:

"His Wife has gone to the Country..."

But he doesn't need to have his wife to do the marketing. She has standardized on brands that have given satisfaction for many years. He can fill the market basket with certainty of satisfaction.

It is the same with the papermakers' felts at the mill where he is superintendent. He has standardized on Hamilton Felts. When he goes fishing his crew know how much tonnage of paper or board they will be expected to get from every felt—*or else*. He knows how many split seconds should be required to prepare a sheet for the driers—how fast it should travel and at what temperature. He knows that the nap of every Hamilton Felt puts a fine finish on his sheets and leaves no felt marks.

He is entitled to an occasional vacation.

MIAMI WOOLEN MILLS

Established 1858

Hamilton Felts

SHULER & BENNINGHOFEN, HAMILTON, OHIO

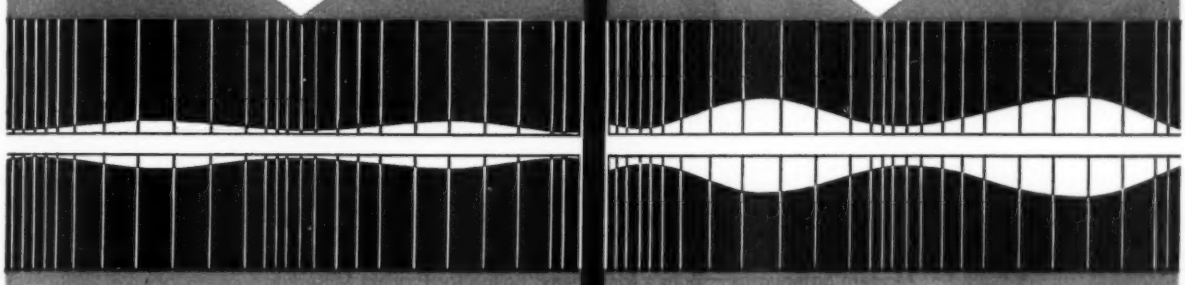
for

UNIFORM PENETRATION

of adhesive in corrugated paperboard

THIS

NOT THIS



Controlled Penetration with KELSIZE

Here — you can see how penetration of adhesive is controlled, regardless of variation in paperboard porosity, through the use of a fraction of a per cent of Kelsize added to the adhesive.

Uncontrolled Penetration

Note that where penetration of adhesive is uncontrolled, the variation of penetration is in proportion to the variation in porosity of the paperboard.

use

KELSIZE

KELSIZE gives you these advantages

Less adhesive used . . . less moisture to remove
Adhesive where you want it . . . where it's needed
Reduced warping . . . stiffer board
Higher machine speeds

Our Technical Service Department will gladly give you more detailed information. Write or call our nearest office.

KELSIZE® *a product of* **KELCO** *company*

20 N. Wacker Drive, Chicago 6, Illinois
31 Nassau Street, New York 5, N. Y.
530 W. Sixth Street, Los Angeles 14, Calif.
Cable Address: Kelcosalgin — New York

Modern Safeguards—Brink's for Money, Bailey for Process Materials

Are Your Process Materials Guarded As Well?

HERE'S HOW TO PREVENT SPOILAGE AND WASTE . . .

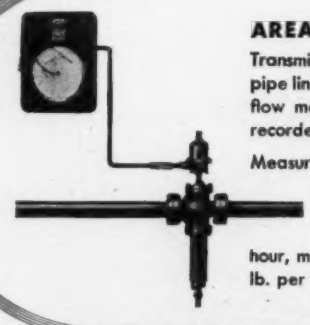
TO avoid waste of valuable process materials and finished products, process rates and conditions must be accurately measured and controlled. That's where Bailey Meters, Analyzers and Controllers can help you to improve the efficiency of your plant.

Take flow for instance. Bailey Meter Company offers a complete line of flow measuring and controlling equipment for applications ranging all the way from high pressure steam to low pressure gas. We measure flow in pipes, open channels, ducts, furnaces, smelters, kilns, ovens, dryers.

When you call Bailey Meter Company, you get the help of years of experience as well as recommendations from a wide selection of measuring and controlling devices.

Your local Bailey Engineer is as near as your telephone. He has the experience and the equipment necessary to set up an effective guard for your process materials.

P-26



AREA TYPE FLOW METER

Transmitter goes into 1, 2 or 4 inch pipe line like a valve and transmits flow measurements electrically to recorder in remote location.

Measures oil and other clear liquids under static pressures up to 600 psi. Minimum range 0 to 1200 lb. per hour, maximum range 0 to 9600 lb. per hour.

BAILEY METERS

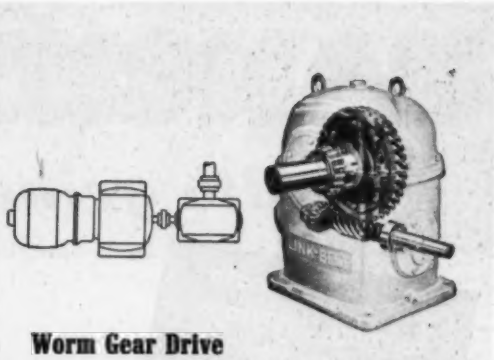
BAILEY METER COMPANY

1058 IVANHOE ROAD
CLEVELAND 10, OHIO

Process Controls

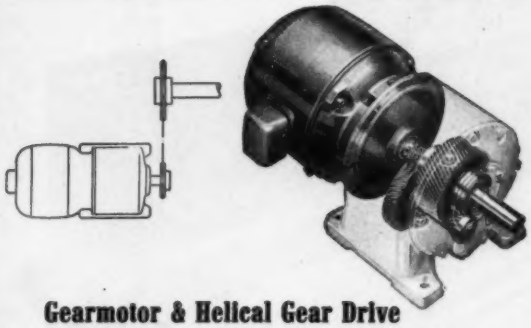
TEMPERATURE · FLOW
PRESSURE · LEVEL
GAS ANALYSIS · RATIO

LINK-BELT makes even your most complex speed reduction jobs *simple*



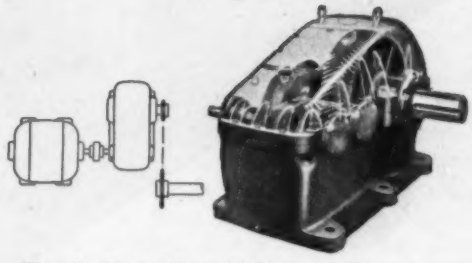
Worm Gear Drive

WORM GEAR and P.I.V. variable speed drives are shown direct-coupled. Link-Belt worm gear drives are available in 3.1:1 to 8000:1 reduction ratios — 1400 to 123,000 in. lbs. torque — 0.22 to 564 output shaft rpm. Ask for Book 2324A.



Gearmotor & Helical Gear Drive

GEARMOTOR is shown with roller chain drive. Link-Belt Helical Gear Drives, Gearmotors and Motogears are available in 6.2:1 to 292:1 reduction ratios — 1 to 30 hp — 6 to 280 output shaft rpm. Ask for Books 2247 and 2451.



Herringbone Gear Drive

HERRINGBONE GEAR DRIVE is shown connected by flexible coupling to motor and with roller chain takeoff. Link-Belt Herringbone Gear Drives are available in 2.84:1 to 326:1 ratios — 0.4 to 2480 hp — 2.2 to 623 output shaft rpm. Ask for Book 2519.

Get the proper drive combination that best meets your overall requirements from a broad line

ONLY Link-Belt can offer you such a broad selection of helical, herringbone and worm gear drives . . . plus the pre-engineered correlation of all its other power transmission equipment. This exclusive combination not only simplifies even the most complex problem — it actually cuts your costs. Here's how:

(1) You save on installation. Dimensions of all components — chains, sprockets, couplings, bearings — are correlated with the reducer's. There's no alignment problem . . . no need to exchange drawings with other suppliers.

(2) You save on operating costs. Power consumption is lower because overall efficiency is assured. And maintenance costs go down when you rely on quality-built Link-Belt equipment.

Let a Link-Belt representative help you figure the best combination for your speed reduction requirements. You'll find it pays to make the nearby Link-Belt sales office or distributor your power transmission headquarters.

LINK-BELT

ENCLOSED GEAR DRIVES

13,128

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities.

NANCHETT

knife grinders

chipper, barker,
hog knives,
paper trimmer,
doctor blades

massive, smooth running, accurate with fine finishes plus high production

for better, more uniform

wood CHIPS

at lower cost

MODEL AK

EXTRA HEAVY DUTY

MECHANICAL OR HYDRAULIC TRANSMISSION DRIVES

speeds: 10′ to 100′ — 30′ to 150′ and faster
motors: 7½ h.p. to 40 h.p.
weights: 10 tons up to 40 tons
capacity: 84″ to 360″ and longer

MECHANICAL OR HYDRAULIC HEAD CARRIAGE DRIVE. FOR FLAT OR CONCAVE BEVEL GRINDING.

FULLY AUTOMATIC TABLE DRIVES HYDRAULIC OR ELECTRICAL

speeds: 10′ to 80′ per minute (faster if required)

capacity: 32″ to 184″

abrasives: segmental or cylinder type grinding wheels

MODEL GK

HEAVY DUTY

FINEST KNIFE EDGES

NANCHETT MANUFACTURING COMPANY

World's Largest Manufacturer of Saw Sharpening and Knife Grinding Machinery

NANCHETT GRINDERS — BIG RAPIDS MICHIGAN

The Paper Industry

July 1953

Forest growth and consumption— how stands the balance sheet?

With continuously increasing demands and the discovery of new uses for wood and paper products, it may be well to re-examine periodically the balance sheet showing the consumption of wood and paper products against the productivity of our forest areas.

Quite frequently we are presented with a rather alarming picture of rapidly dwindling forest resources, as against another point of view that altogether discredits the danger of an impending timber famine. While there are many followers of these two extreme schools of thought, the true picture probably lies somewhere in between.

There is no doubt that the exploitation of our forest resources is proceeding at an unprecedented, rapid rate. Only a few decades ago we would have looked upon the 16,000,000-acre Tongass forest in Alaska—which is now being opened for logging operations—as something bordering on the inexhaustible. Today we are only mildly impressed with its area, growth, and estimated annual yield of 1,500,000 cords pulpwood—enough to sustain 10 mills of the same capacity as the $46,000,000 Ketchikan pulp mill scheduled to start operations in 1954. As so aptly pointed out by G. W. E. Nicholson of Union Bag, the estimated annual pulpwood yield of the Tongass area is equivalent to the pulpwood consumption of only two mills in Savannah, Ga., i.e., Union Bag and Southern Paperboard, after the completion of their present expansion programs.

This rapidly accelerating pulpwood consumption would seem to support the alarmists' prediction of an approaching pulpwood famine. What then about some of the more hopeful signs on the balance sheet?

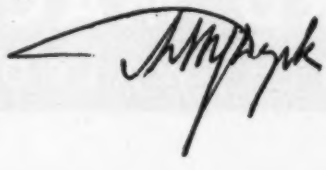
In the first place, we have in the USA a productive forest area of some 461,000,000 acres. Combine this asset of natural wealth with the ingenuity of man, which invariably proves to be a nation's most important asset, and we have the means of averting a rapid depletion of our forest resources..

Already spurred into action by the occurrence of vast denuded forest areas, as a result of indiscriminate logging operations, numerous forestry nurseries have been established under a nation-wide reforestation program. Florida alone, it is reported, will produce 50,000,000 pine seedlings in 1953. Its 1952 output of 37,000,000 seedlings, it was reported, fell short of demand by about 23,000,000 seedlings.

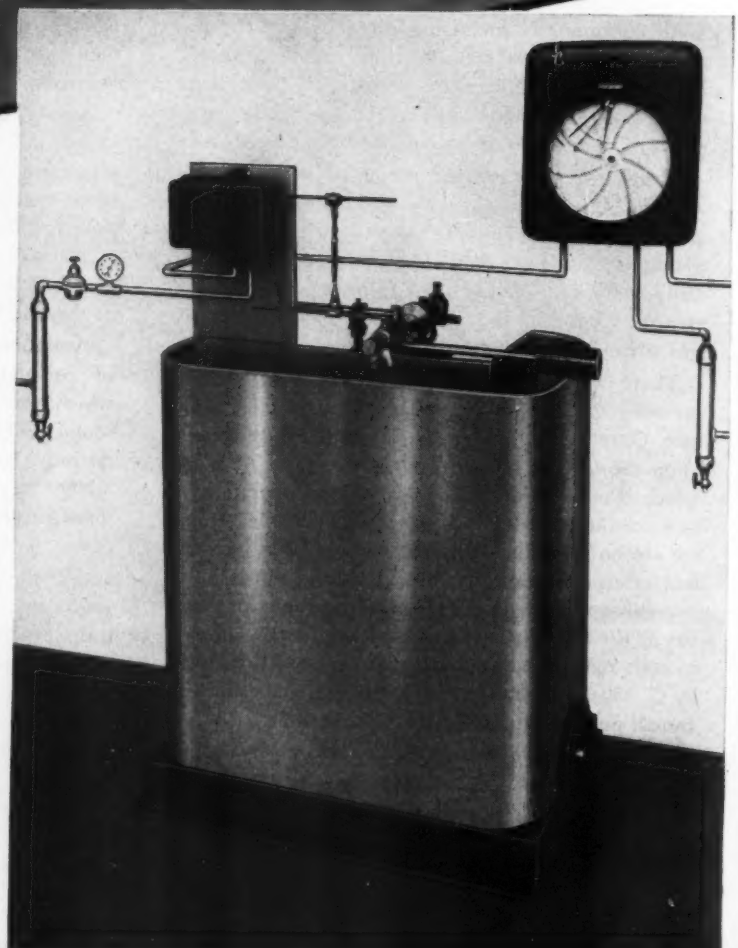
Attention is now focused on the 261,000,000 acres of privately-owned woodlots, the productivity of which could easily be tripled if operated under a sound program of continued timber crop production. Already, by the end of 1952, this acreage included 4,209 "tree farms" totalling some 28,000,000 acres managed for optimum and continued crop production.

All these efforts are now showing sufficiently promising results that within a few years many woodpulp producing mills may obtain their entire pulpwood requirement locally, instead of being faced with the problem of transporting it over long distances.

The consensus today is that forest growth and wood and paper product output can be held in balance. However we know that the demand for wood and paper products will increase tremendously and, while we may be confident that through man's ingenuity this balance will be maintained indefinitely, there is no need for complacency. There can be no relaxation of our efforts toward progressively increasing the productivity of our forest areas.



NOW — ALL THE ACCURACY — ALL THE RELIABILITY of BIRD Consistency Regulation with AIR OPERATION and a CHART RECORD



The Bird Consistency Regulator with Foxboro Pneumatic, Recording Control combines precise control (not more than 0.1% heavier or lighter than the designated consistency) with complete flexibility and a permanent, continuous record of both incoming and outgoing consistencies. The Foxboro Stabilog Recorder-Controller may be located wherever most convenient for the operator.

Whether pneumatically or mechanically actuated, the Bird Regulator is the one best bet at every step in the pulp and papermaking process that calls for accurate, dependable consistency control.

BIRD MACHINE COMPANY

SOUTH WALPOLE • MASSACHUSETTS

Working with Washington . . . economy and efficiency . . . and 1,200 technicians

In a quiet and unobtrusive though effective manner the American paper industry has set the pace for one of the most important programs of industry-government consultation in the history of the Department of Commerce. During World War II and under a Democratic administration the paper industry established the initial principle of such meetings, the move being spearheaded by such outstanding figures as Sidney Ferguson, Cola G. Parker, and George Olmsted Jr.

Other industries have attempted a similar form of consultation, but the paper industry crystalized the formal organization of a representative body from industry to assist in placing its resources at the disposal of government.

First to set in motion the new program of Secretary of Commerce Sinclair Weeks was a meeting of the paper industry's council on June 16. This inaugurated a nation-wide project calling for the establishment of similar councils representing the country's major industries. The official announcement of the new program is made in a formal release by Commerce, which states in part:

"Acting on the assumption that the Congress will continue in limited form the vital provisions of the Defense Production Act after June 30, the expiration date, the Commerce Department has completed preparations to set up a streamlined organization which we can describe as a business services agency.

"We propose (a) to continue the remaining necessary functions of the Department's National Production Authority, such as allocation related to defense and atomic energy developments, and (b) to establish approximately 20 main industry divisions with key advisers, recommended by various industries to represent them, and staffed for operation purposes by industrial experts from the career service."

Not more centipede

The government pronouncement continues to say that the new unit will be coordinated with agencies of the Department so that not only will government have access to top-level business counsel, but each segment of industry will have its own special division for receiving government information and service. Under the new program, the chairman of each advisory group will be an outstanding industrialist recommended by his industry and serving full time without pay on a six-month rotating basis. It is pointed out that the new program is not adding another leg to the federal centipede and not enlarging overall bureaucracy, but is an economy and efficiency measure.

The statement makes one other pointed comment, referring back to the original Hoover plan for organizing Commerce when he was secretary of the Department:

"For more than 20 years the Commerce Department — probably because its function is to foster business—was treated as a cast-off orphan by administrations which misunderstood business, burdened business, shackled business, punished business and then—ironically—blamed business for not performing as many miracles as it could have done, had it been free. That's what the government did to business for a score of years. That's what government stopped doing on January 20."

Cooperation, not suspicion

The new look in Washington was again placed on parade by the new chairman of the Federal Trade Commission in an address in which he said he planned reorganizing the agency to put much more stress than ever before on the use of economic analysis and on voluntary methods of obtaining compliance with the laws the Commission enforces. In simple words, the new program is to rigidly enforce the anti-trust laws and yet to work with business instead of being in a constant position of suspecting every business of endeavoring to covertly evade those laws.

The battle over the extension of the Reciprocal Trade Agreement Act has been won, in part at least, by the hard-boiled Chairman of the Ways and Means Committee. The bill to extend the existing Act for one year was denuded of its restricting features objected to by the administration, but extended on the pledge that there would be no further tariff rate reduction negotiations pending the report by a newly authorized commission to study the entire tariff and world trade problem scientifically. Coupled with this is the decision to enlarge the Tariff Commission to seven members, with a presumable Republican majority, and thus hurdle the barrier set up under the mis-named bipartisan commission of six, where three Democrats of the free trade stripe could and did regularly veto nearly every proposed easement of injury to domestic industry caused by increased imports.

Cartel control

Also, other industries have seen the danger in the proposal to supplant the present method of assessing duties on the foreign home market value by one to allow cartel control of prices, by allowable price-fixing of sales to the United States alone. This danger in the previous session of Congress appeared to be understood by the paper industry alone, but the hearings on the pending Customs Simplification Bill found many other industries supporting the paper industry's original position. This bill has at this writing not emerged from the Ways and Means Committee, and Chairman Reed has so far bottled up both this measure and the Administration's demand for an extension of the excess profits tax, presently destined to expire on June 30.

The Judiciary Committee of the House of Representatives has asked the Department of Commerce to study a group of industries, including paper, to provide an analysis of financial incentives and deterrents incident to the development of existing enterprises and to the expansion of existing facilities.

This study is expected to give the House Committee the material on which to modify, if necessary, existing anti-trust laws.

100,000 new acres

The manner in which the paper industry is promoting scientific forestry is demonstrated by a recent survey showing that the industry employs over 1,200 technical men in its program for the practice of forestry, and it has plans for the planting annually of 100,000 acres of potential pulpwood land.

The latest production statistics for the paper and paperboard industries give promise of a huge output this year, possibly exceeding all previous output. The market appears thoroughly stabilized, and the production for the first few months of the year, if maintained for twelve months, will top any tonnage previously produced.

Financial Reports

The general slump in securities prices which followed the negotiations for a Korean truce carried many paper mill issues to prices lower than those which have prevailed for many months. As the market slump steadied, however, paper mill securities showed symptoms of maintained strength.

Net incomes

Bathurst Power & Paper Co. Ltd.—Estimated net profit for the first quarter was $277,437, down from the $635,460 for the same period last year.

British Columbia Forest Products—Net profit for the six months ended March 31 was $933,741, compared to 1952's $627,887.

Celanese Corp. of America—Net income for the first quarter was $2,709,041, compared to $944,569 in the same period a year ago.

Celotex Corp.—Net income for the six months ended April 30 was $1,155,195, as compared with $119,766 for the comparable period in 1952, when operations were curtailed by a long strike.

Certain-Teed Products Corp.—Net income for the quarter ended March 31 was $651,967, as compared to $608,809 a year ago.

Clopay Corp.—Net loss for the quarter ended March 31 was $209,145, as compared to a profit of $120,428 in the same period in 1952.

Combined Locks Paper Co.—Net profit for the year to February 28 was $620,339, as compared to $576,242 for the same period a year ago.

Dixie Cup Co.—Net income for the March quarter was $509,059, as compared with $470,593 for the similar quarter in 1952.

Doeskin Products Inc.—Net income for 1952 was $104,532, as compared with $751,943 in 1951.

Federal Paper Board Co.—Net income for the 12 weeks ended March 21 was $515,817, as compared with $501,559 for the comparable period last year.

Gaylord Container Corp.—Net income for the first quarter was $1,754,248, as compared with $1,945,642 last year.

Great Lakes Paper Co. Ltd.—Net profit for the first quarter was $556,484, down from the $848,792 for the corresponding 1952 period.

Great Northern Paper Co.—Net income for the first quarter was $1,141,074, as compared with $1,141,573 for the same quarter in 1952.

Hammermill Paper Co.—Net first quarter income was $274,084, as compared to $350,746 in the same 1952 quarter.

Hinde & Dauch Paper Co. of Canada Ltd.—Net profit for 1952 was $1,131,593, a decrease of $291,771.

Hollingsworth & Whitney Co.—Net first quarter income was $524,712, as compared with $811,257 in 1952.

International Paper Co.—Net income for the three months to March 31 was $13,795,977, as compared with $12,746,594 for the same period in 1952.

Kalamazoo Vegetable Parchment Co.—Net income for the six months ending March 31 was $1,044,999, as compared to $1,318,619 a year ago.

Keyes Fibre Co.—Net first quarter income was $236,976, as compared to $244,125 a year ago.

Kimberly-Clark Corp.—Estimated net income for the fiscal year ended April 30 was $8,324,000, compared to $10,826,772 for the previous fiscal year.

Marathon Corp.—Net income for the year 1952 was $2,304,486, as compared with $3,311,122 in 1951.

Mead Corp.—Net income for the 12 weeks ended March 22 was $1,307,627, as against $1,195,260 for the comparable 1952 period.

Mersey Paper Co. Ltd.—Consolidated net profit for 1952 was $2,534,246, down from the $2,723,325 of 1951.

Minnesota & Ontario Paper Co.—Net income for the first quarter was $1,293,618, as against $1,193,503 a year ago.

Munising Paper Co.—Net 1952 income was $291,277, contrasted to the previous year's $363,096.

National Container Corp.—Net income for the quarter ended March 31 was $1,039,013, compared with $1,098,141 for the same period in 1952.

Nekoosa-Edwards Paper Co.—Net first quarter income was $417,000, a drop of $220,000 from the 1952 figure.

Oswego Falls Corp.—Net first quarter income was $372,731, as compared with $128,145 in the same 1952 quarter.

Oxford Paper Co.—Net first quarter income was $601,457, as compared to $714,078 in 1952.

Port Huron Sulphite & Paper Co.—Net income for the year to January 31 was $199,376, compared with $236,122 for the previous year.

Powell River Co. Ltd.—Net profit for 1952 was $7,942,393, compared to the previous year's net of $9,680,479.

Puget Sound Pulp & Timber Co.—Net first quarter income was $676,415, as against $775,300 a year ago.

Rayonier Inc.—Net income for the first quarter was $2,666,135, as compared with $2,928,698 a year ago.

Rhinelander Paper Co.—Consolidated net earnings for the six months to March 31 were $650,109, as compared to the $748,224 a year ago.

St. Lawrence Corp. Ltd.—Net profit for the quarter ended March 31 was $1,102,904, as compared to $1,184,029 in 1952.

Westminster Paper Co. Ltd.—Net profit for the year ended January 31 was $614,657, as contrasted to $626,741 for the year ended January 31, 1952.

West Virginia Pulp & Paper Co.—Net income for the six months ended April 30 was $4,455,000, as compared with $5,535,000 for the comparable period a year ago.

Dividend declarations

Champion Paper & Fibre Co., The, has declared a dividend of 37½ cents a share on the common for payment June 1 to holders of record May 11; also, the regular quarterly dividend of $1.12½ on the preferred, payable July 1 to record of June 9.

Crown Zellerbach Corp. has declared an initial quarterly dividend of 45 cents on the new common, payable July 1 to record of June 12.

Marathon Corp. has declared the regular quarterly dividend of 30 cents on the common, payable May 29 to holders of May 8; also, the preferred dividend of $1.25 a share, payable July 1 to record of June 19.

Mead Corp. has voted dividends of 40 cents on the common and $1.06¼ on the 4¼ per cent cumulative preferred, both payable June 1 to record of May 8.

Mosinee Paper Mills Co. has declared a regular quarterly dividend of 20 cents a share and an additional special dividend of 20 cents, both payable May 30 to record of May 16.

National Container Corp. has declared a 15-cent quarterly cash dividend and a 1 per cent stock dividend on the common, a 31¼-cent dividend on the $1.25 convertible preferred, both payable June 10 to holders of May 20.

Paper mill corporate changes

Combined Locks Paper Co. has earmarked $2,000,000 for debt retirement by borrowing $1,000,000 each from a banking group and a group of life insurance firms. To the banks the Wisconsin firm sold 3¾ per cent promissory notes due July 1, 1954, through January 1, 1959; and to the insurance firms it sold 4¼ per cent notes due July 1, 1954 to 1969.

Crown-Zellerbach Corp. has been advised that holders of more than 2,240,000 shares of Canadian Western Lumber Co.—or more than 70 per cent of the outstanding shares—have accepted the exchange offer in connection with

COOKING 500 TONS OF CHIPS
at one time

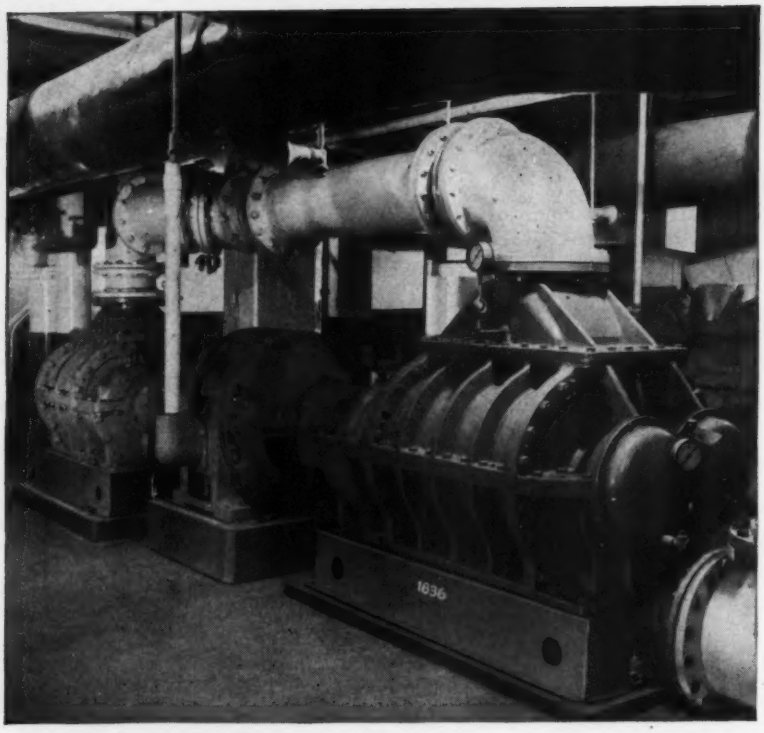
In
BLAW-KNOX DIGESTERS

Shown above are the operating floor and some of the ten Blaw-Knox digesters installed in WESTVACO's new plant at Covington, Va. Each of these cookers has a chip capacity of 50 tons, and is charged and discharged by the latest in automatic equipment.

The choice of Blaw-Knox digesters was prompted by our pioneer work in this field and our unequalled experience in building efficient vessels for processing Paper, Cotton, Wood and Organic Materials . . . To be better acquainted with our abilities and facilities *write today for Bulletin No. 2403.*

BLAW-KNOX COMPANY
BLAW-KNOX EQUIPMENT DIVISION
PITTSBURGH 22, PA.

BLAW-KNOX



AIR-HANDLING "Specialists" HELP SOLVE VACUUM PUMP PROBLEMS

We do not consider as anything remarkable the records for economy and reliability established by Roots-Connersville Vacuum Pumps. We simply applied to the specific problems of the paper industry the proved principles of design and construction accumulated in our almost a century of experience in building air- and gas-handling equipment, *exclusively*. The results have proved profitable to paper mill operators because of these advantages:

Lower first cost
Very little sealing water needed
Smaller floor space needed
Reduced power consumption
Low maintenance expense
Less expensive foundations
Performance not adversely affected by high temperature of incoming air or sealing water

The combination of operating savings with proved month-after-month reliability accounts for the growing acceptance of these simple, rotary positive single or compound units, operating at speeds of 600 rpm or higher.

This long, specialized experience is at your command for solving vacuum pump problems, or for any other equipment needed to handle air—or gas.

Write for Paper Mill Bulletin 50-B-13.

ROOTS-CONNERSVILLE
Exclusive Specialists in Handling Gas and Air

ROOTS-CONNERSVILLE BLOWER A DIVISION OF DRESSER INDUSTRIES, INC. 153 Monroe Ave. • Connersville, Indiana

the proposed acquisition of that company by Crown. It has been decided, therefore, to complete the exchange.... Also, C-Z announced that as of June 1 it had declared effective the exchange offer that it made under date of April 30 to the shareholders and holders of the voting trust certificates of St. Helens Pulp & Paper Co. It was estimated that the formal closing would take place on June 5. J. D. Zellerbach, president of Crown, advised that more than 99 per cent of the outstanding shares of St. Helens had accepted the offer.

The Mead Corp. has borrowed from a group of life insurance firms on an issue of $12,500,000 twenty-year sinking fund notes that will bear interest at the rate of 4½ per cent. The insurance group is composed of Northwestern Mutual Life Insurance Co., Milwaukee; the John Hancock Mutual Life Insurance Co. of Boston; the Massachusetts Mutual Life Insurance Co. of Springfield, and the Sun Life Assurance Co. of Canada. The new loan agreements provide for a call on an additional $2,500,000 until June 30, 1954, on the same terms. Sinking fund payments commence June 1, 1959, and payments from that date until 1967 are at the rate of $700,000 per year, and from 1968 to 1973 are $1,300,000 per year. The new loan replaced $9,625,000 of notes outstanding due 1953-1966, which have been retired. The net proceeds will be added to the general working funds of the corporation.

New York Stock Exchange—Stocks

Closing Prices

	June 19, 1953	May 19, 1953
A.P.W. Products	3⅛	3⅞
Celotex	17⅝	17⅞
Same Preferred	16¼	* 16¼–16⅝
Certain-teed Products	13⅛	14⅛
ChampionP.&F. Co.	27⅝	* 28⅝–29¼
Same Preferred	93	* 95⅝–96
Chesapeake Corp.	28½	* 29¼–30
Container Corp.	40	40⅛
Same Preferred	.....	100¼
Continental Diamond	10¾	11⅞
Crown Zellerbach	27	29½
Same Preferred	92½	93¾
Dixie Cup	32⅝	37
Eastern Corp.	15	16
Robert Gair	17⅝	18½
Gaylord Container	26	26¼
Hammermill	13⅞	15¼
International Paper	49¼	52½
Same Preferred	93½	* 96–98½
Kimberly-Clark	40½	41½
MacAndrews & Forbes	44	40¾
Marathon	20½	19¾
Masonite	19¼	20¼
Mead Corp.	24⅝	* 26⅛–26¼
Same Preferred	87¼	* 92–94⅛
National Container	10	10¾
Rayonier, Inc.	25¾	28
Same Preferred	31⅝	32½
Scott Paper	58¼	57⅞
Same $3.40 Preferred	86	87
Same $4 Preferred	98	100
St. Regis Paper	20¼	22½
Same Preferred	92	94
Sutherland Paper	26¼	27
Same Preferred	100	*105½–106½
Union Bag & Paper	43⅜	46⅝
United Board & Carton	13⅝	* 14½–15
United Wall Paper	2⅜	* 2⅞–3
Same Preferred	24	25½–26⅞
U.S. Gypsum	108	111⅝
Same Preferred	161⅝	*160–164
West Virginia P.&P.	69	* 71–72
Same Preferred	105⅝	*106⅝–107

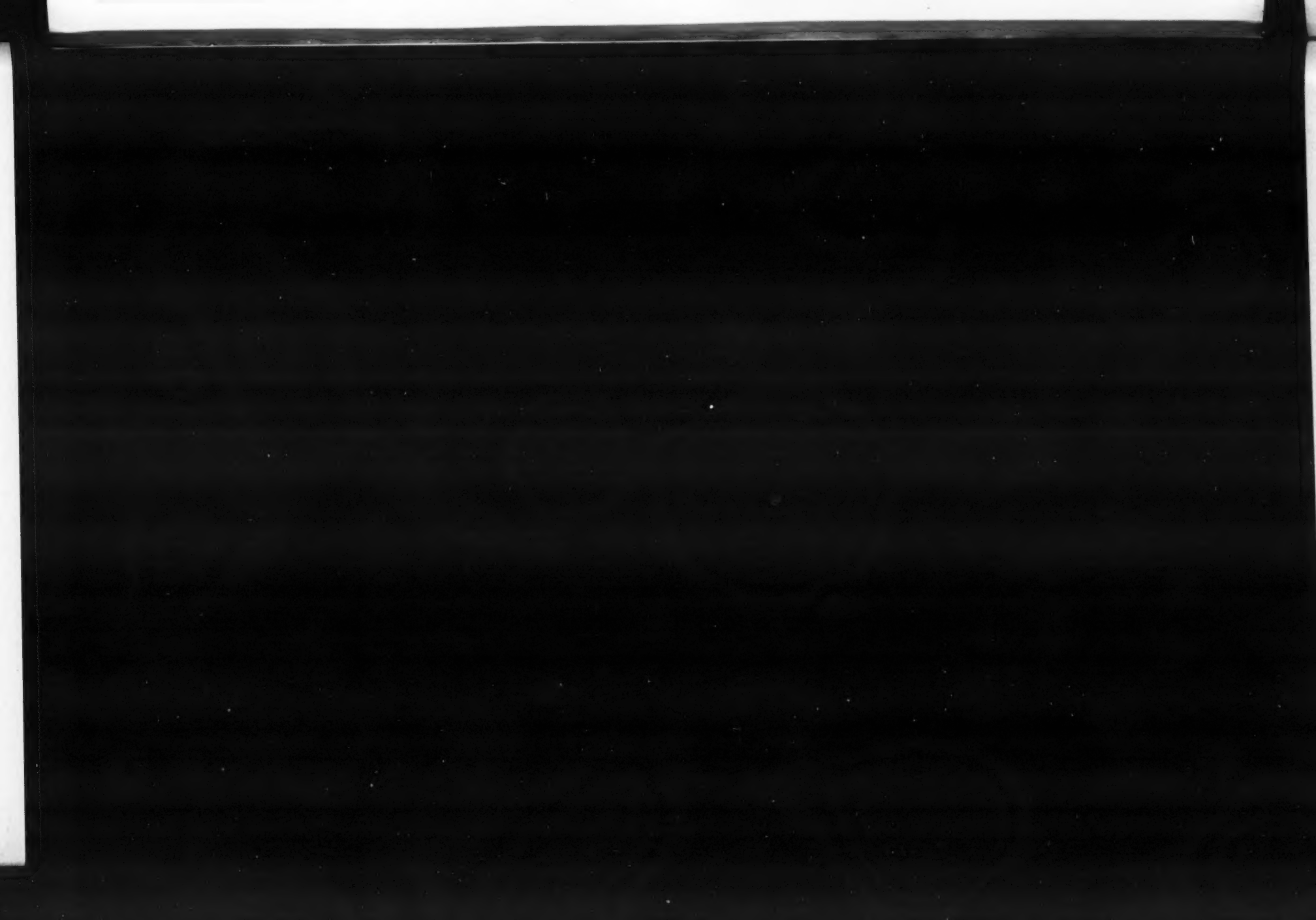
New York Stock Exchange—Bonds

Celotex 3½%	.....	.....
Champion P.&F. Co. 3½	.....	.....
Mead Corp. 3%	.....	.....

American Stock Exchange—Stocks

Am. Writing	.....	10⅝
Brown Co.	8⅝	9⅜
Same $5 Preferred	87	90¾
Same $3 Preferred	.....	49¾
Great Northern Paper	52½	53¾
Puget Sound	26¼	29

*Closing Bid and Asked Prices



In various services in the Paper Industry, ordinary steel valves seem adequate — for awhile. But later on corrosive fluids take their toll. Excessive maintenance and replacement begins.

When you install (or replace with) Powell Stainless Steel Valves, their much longer life and lower maintenance will repay, many times over, the slight differential in the cost of these valves.

The Wm. Powell Co. Cincinnati 22, Ohio

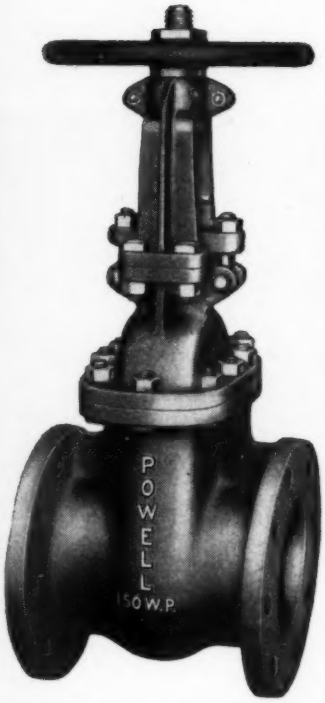


Fig. 2453-G — Large 150-pound Stainless Steel O. S. & Y. Gate Valve. Precision-fitted, accurately guided interchangeable solid or split wedge. Separable yoke arms in sizes 5" to 30", incl.

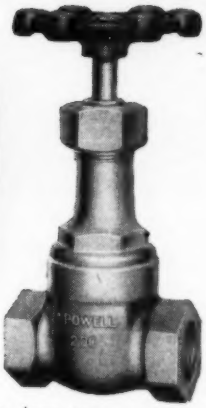


Fig. 1832—200-pound Stainless Steel Gate Valve with screwed-in bonnet. Sizes ¼" to 2", incl.

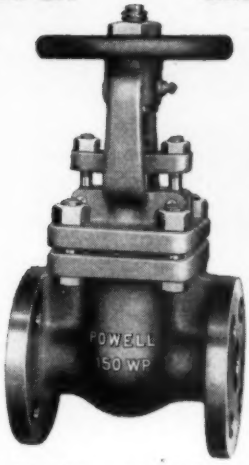


Fig. 2491 — 150-pound Stainless Steel O. S. & Y. Gate Valve with either solid or split wedge. Sizes ¼" to 2", inclusive. Also available with screwed ends.

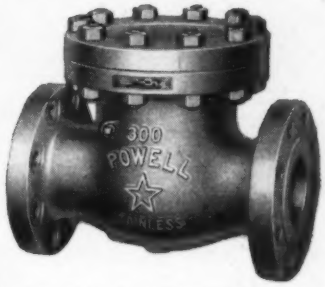
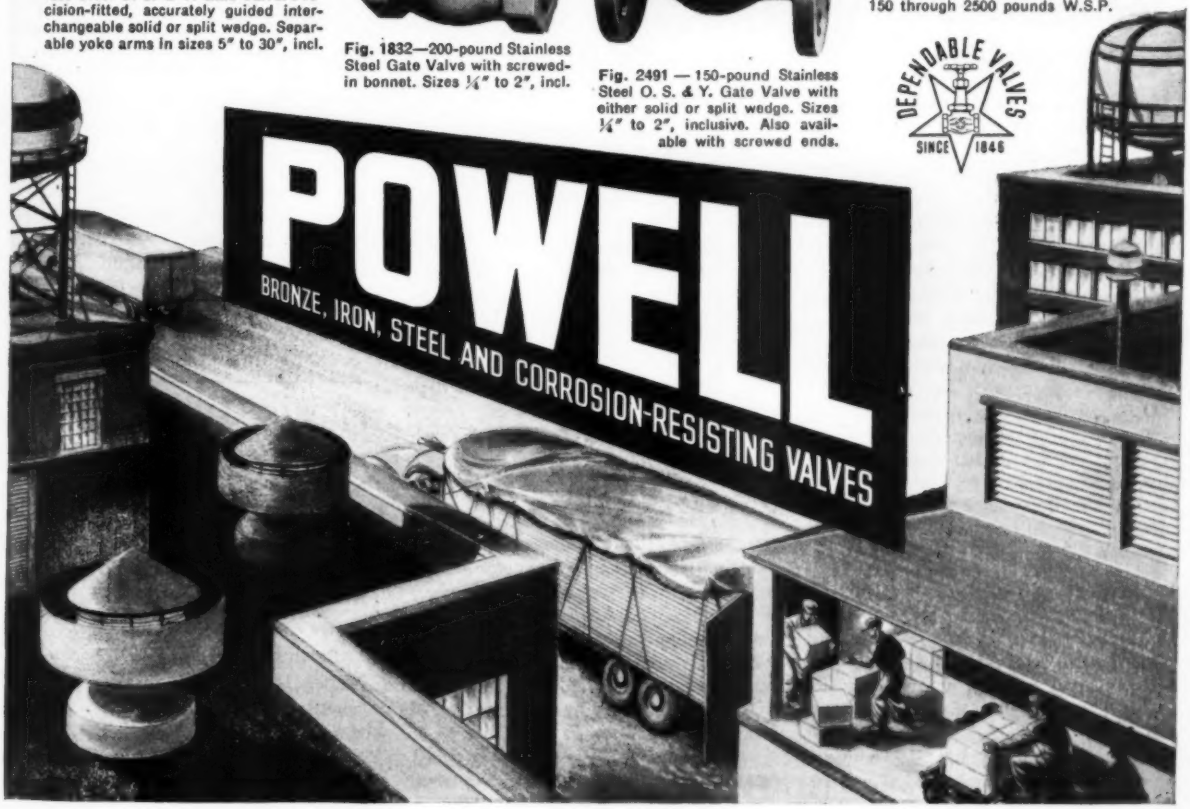
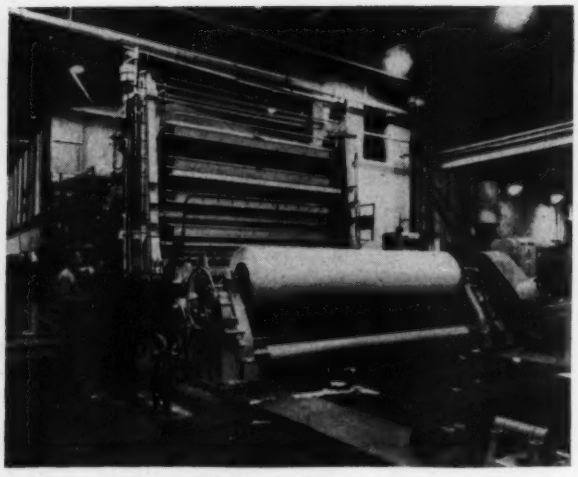


Fig. 3061 S. S. — 300-pound Stainless Steel Swing Check Valve. Made from a heavy steel valve pattern, it conforms to A.S.A. and A.P.I. Steel Valve Standards. These valves are available for 150 through 2500 pounds W.S.P.

DEPENDABLE VALVES SINCE 1846



The Paper Industry News of the Industry



NO. 3 ROLLS AGAIN at International Falls after month-long modernization project; calender is push-button controlled by the man at left

MODERNIZED DRYER SECTION boasts 42 paper dryers, as compared with the previous 38; note automatic control panel in the right foreground

Mando Puts No. 3 Machine into Operation After Modernization

COSTING UPWARDS of $1,000,000, the complete modernization of No. 3 paper machine at the International Falls mill of Minnesota & Ontario Paper Co. has made possible the production of a wide variety of bleached groundwood and chemical papers.

Marking the second Mando paper machine modernization in 1953 (No. 5 at Fort Frances, Ont., was rebuilt in February), work on No. 3 began March 15. The project was part of the firm's long-range modernization and improvement program that has cost more than $33,000,000 since 1945.

Originally a newsprint machine, No. 3 was partially remodeled in 1938 by replacing the fourdrinier and head box and installing a new suction couch and suction first press. Since 1938 it has been turning out diversified groundwood paper and sulfite grades.

Up to 1,200 fpm

Featuring a sectional electric drive manufactured by Reliance Electric & Engineering Co. of Cleveland, the machine is now capable of producing a wide range of basis weights at speeds of up to 1,200 fpm. The electric drive has a multiple generator system, tile housing around the generators, and a modern automatic switchboard. Also added to No. 3 was a new vertical agitated machine chest.

The size tub and breaker stack is located between the second and third dryer sections. Major parts for the machine improvement were furnished by Beloit Iron Works, Beloit, Wis.

Much of the necessary work in the finishing room and basement had been done before shutdown. Extending 40 ft. into the old finishing room, the rebuilt machine has 42 paper dryers, compared with its previous 38. There are 10 felt dryers instead of four, and all felt dryers are driven by belts instead of by gears. The dryers were equipped with new steam joints.

Forced vapor circulation

Installed during the modernization was a new dryer drainage system embodying forced vapor circulation. The equipment was supplied by Midwest-Fulton Machine Co. of Dayton, Ohio, and was applied to the three dryer sections. Also included in the rebuilding was an automatic moisture control system manufactured by Stamm Co. of Lockport, N.Y.

The center wind reel was replaced, and a new hydraulic lift table of larger capacity and a new press section were installed. Beloit air guides have been attached to keep the felt centered. Dryers and felt rolls in the second section have been completely roller bearing-equipped and boast a continuous oiling system. Smoothing presses were relocated between the first and second sections.

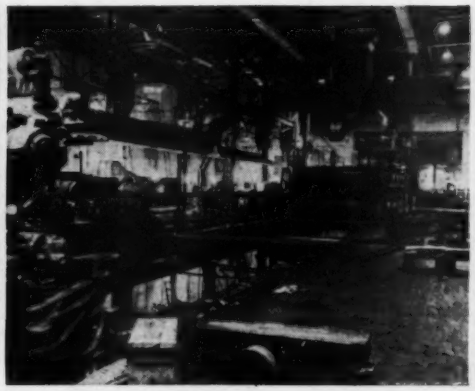
Mando maintenance crews worked with Paul A. Laurence Co. of Minneapolis on the International Falls project. E. A. Yunker, head erector for Beloit Iron Works, supervised in the erection of the Beloit equipment. Additional service men from Reliance Electric and Midwest-Fulton assisted in the construction and installation work.

NEWS HIGHLIGHTS

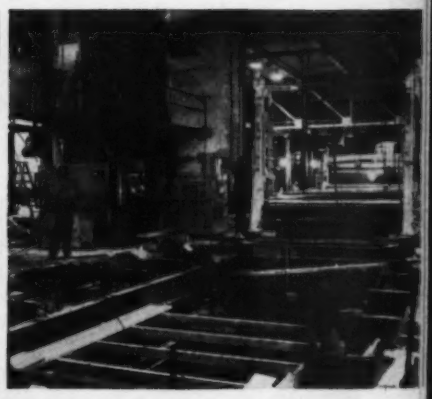
Mando Rebuilds No. 3.....418
Nat. Container Mill "Most Modern".....419
New Wausau Acid Plant.....423
Institute Dedicates Building.....424
Rhinelander Marks 50 Years.....427
Outlook Good: Commerce.....428
Eastern Installs Beta Gauge.....436
Nepco Develops Ream Wrapper and Labeler.....438
Wyandotte Expands Research.....439
Production Report.....444

Mando Rebuilds: a Six-Step Project

1 AT SHUTDOWN time a new arch had been cut in machine room wall to accommodate lengthened machine

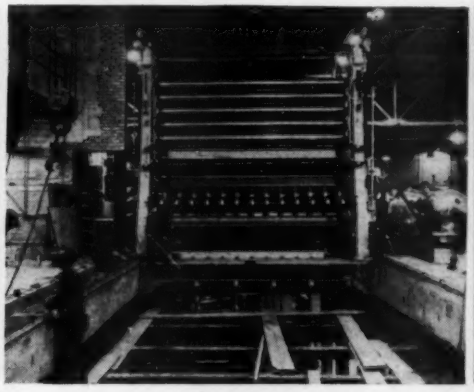


2 ON SECOND DAY dismantling had proceeded to this stage—hood off and many dryers removed



3 AFTER FIVE DAYS dryers were completely removed and a new calender stack was being installed

4 SEVEN DAYS LATER view toward wet end shows new concrete poured and base plates installed



5 DRY END photo shows calender stack completely installed, preparations made for dryer installation

6 TEN DAYS LATER most of the dryer rolls were in place and controls were being installed

Glatfelter to Convert from Soda to Sulfate Process

Approval to proceed with a $3,800,000 improvement program has been given to P. H. Glatfelter Co. of Spring Grove, Pa., by company stockholders. The firm has arranged through First Boston Corp. for a $6,300,000 first mortgage loan with the Mutual Life Insurance Co. of New York.

One of the first steps in the current program calls for conversion of the pulp mill from the soda process to the sulfate process. This change includes the addition of another digester, a new digester heat recovery system, a new liquor-making and causticizing system, and the installation of a Combustion Engineering Inc. spray-type recovery boiler.

Glatfelter's existing bleach plant will be augmented with a chlorine dioxide stage and a completely modern bleached stock storage system.

Air and stream pollution has been taken into consideration in planning the expansion. The spray-type recovery boiler will be equipped with an electrostatic precipitator by Koppers Co. The unit is designed to remove 97½ per cent of the solids from the boiler exit gases. And the chlorine dioxide bleaching stage will enable the company to improve the color of the water leaving the bleaching department, long a serious problem.

Waste Space and Motion Cut to Minimum at New National Container Mill

National Container Corp.'s production of kraft will be increased by about 50 per cent with the completion late this year of its new mill at Clyattville, Ga. The designed capacity is to be a daily 500 tons of 42-lb. liner board.

According to project engineers for Merritt-Chapman & Scott Corp., the operation will be "the most modern and efficient mill possible." The 500-ton capacity for a one-machine mill, they say, has been made possible by designing a compact, thoroughly integrated mill in which waste space and motion are cut to a minimum. M-C & S holds the contract to design, construct and start-up the unbleached sulfate kraft pulp, board and paper project.

At Clyattville—about 9 miles from Valdosta—the various mill buildings are grouped closely, making for efficient operation and maintenance. Because of the compact layout, there are only about 16 conveyor systems, whereas most similar operations entail the use of 20 to 26. Instead of the usual chain and/or flume conveyors, there is a 900-ft. rubber belt conveyor leading from the 20,000-cord woodyard to the debarking drums.

The use of outdoor bark and power boilers, according to M-C & S, is something new for a southern mill. Only the recovery boilers and such weather-sensitive equipment as feedwater pumps and the various control instruments are to be installed under roof.

Water from wells

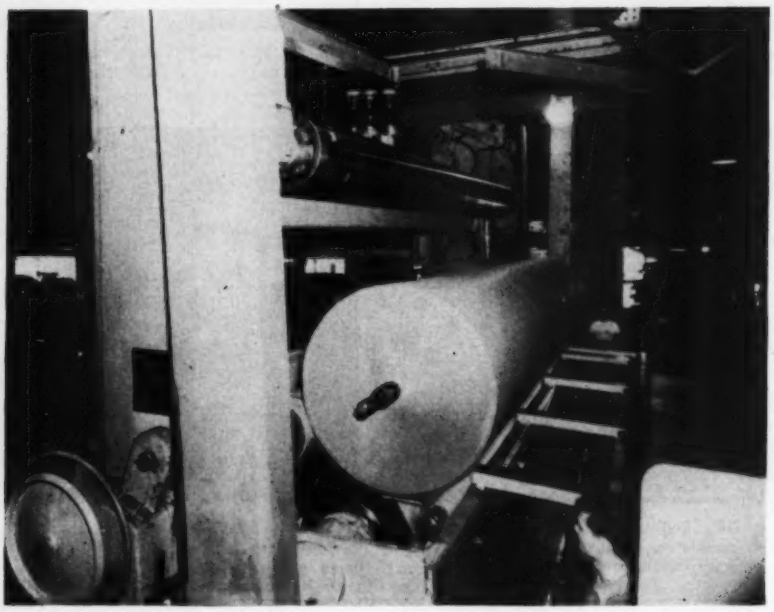
The new National Container operation is one of the few in the South not situated on an appreciable body of water. Necessary process water is obtained from two 800-ft. wells, each producing about 4,000,000 gal. per day. An additional well produces boiler feed water at about 750 gal. per minute. The small amount of water is made possible by the use of a recirculating system that permits constant reuse.

To protect the area against pollution,

the process water containing chemicals and extra wood fibers will empty into three effluent basins, each designed to hold about six months' supply for a total retention time of a year and a half. At the end of this time, the water—now clear of fibers and chemicals—is released into small streams and dried-up riverbeds, eventually finding its way to the Suwanee River.

The heavy clay content of the soil at the project site proved a valuable construction aid. In addition to providing an estimated 2-ton per sq. ft. bearing value for the foundations, its firm texture permitted excavations as deep as 14 ft. without the use of shoring. Foundation trenches consequently could be filled with concrete without the use of wooden forms.

According to early estimates, about 3,600 tons of structural steel was to be used in the building of the mill, while 18,000 cu. yards of specially compounded concrete was to be poured. Due to the lack of river bank gravel in the area, crushed stone from the quarries of Georgia is used as aggregate.



REWOUND ROLL being ejected from the new high-speed Imperial "100" built by Cameron Machine Co. for Westvaco

High-Speed Winder Installed at Charleston by Westvaco

One of the world's highest speed winders has been installed at the Charleston, S.C., mill of West Virginia Pulp & Paper Co. The winder, manufactured by Cameron Machine Co. and known as the Imperial "100," has a 234-in. trim width and a 72-in. diameter rewind capacity.

The Imperial was designed for the production of large diameter rolls at higher rewinding speeds than had ever before been required. In addition, it was specified that a minimum of downtime between set changes be required. The unit is currently running 42-lb. and 69-lb. board at web speeds in excess of 5,000 fpm and has made sustained runs at 6,000 fpm.

To meet the high-speed requirement, the Imperial "100" has heavy slab type frames with the main drive gears divorced from the machine proper, thus virtually eliminating vibration even at maximum web speeds. The rotating cross-members are dynamically balanced for speeds up to 7,000 fpm and are mounted on self-aligning anti-friction bearings.

Among the features incorporated in the Imperial to minimize downtime between set changes are provisions for rapid adjustment and spacing of the score-cut slitting elements; power actuated rewind shaft loader and mechanism for ejecting the rewound rolls. For quick stopping between sets and as a safety factor, the idler and compensating rolls are equipped with automatic brakes. Additionally, the riding roll is equipped with hydraulic shock absorbers to inhibit "bouncing" and is designed to provide optimum pressure and torque distribution across the full width of the web even when running off-caliper paper.

Crown Zellerbach Completes Acquisitions "For Present"

Crown Zellerbach Corp. has completed its program of acquisitions, "at least for the present," according to J. D. Zellerbach, president of the firm. C-Z has recently acquired controlling interests in St. Helens Pulp & Paper Co. and Canadian Western Lumber Co. Both deals are now regarded as assured.

St. Helens, with large holdings of second growth timber and a mill being readied for the production of high-class paper products, fits into Crown's short-term program; while Canadian Western, with a perpetual cutting contract and large timber holdings on Vancouver Island, adds materially to the long-term outlook.

After these acquisitions, Crown will probably have the second largest timber holdings in the West, next to the Weyerhaeuser Timber Co. interests, Mr. Zellerbach said.

Stevens Expansion at Westfield

The Stevens Paper Mills Inc. is expanding production of electrical insulation paper by the construction of a 20,000-sq. ft. plant at Westfield, Mass. The structure, which will house a paper machine 94 in. in width and 109 ft. long together with auxiliary equipment, will cost several hundred thousand dollars.

When operation begins in January, the present work force will be increased from 350 to 400. Stevens will then have a battery of seven machines, and its capacity will have been increased 20 per cent.

Northern-Marathon Merger Details Revealed

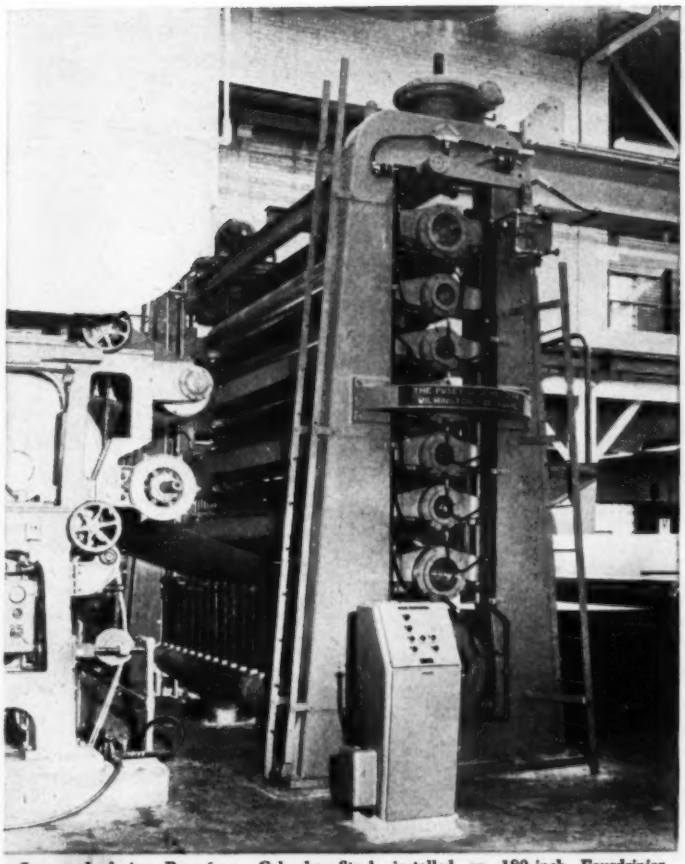
Completion of arrangements to combine interests of Marathon Corp. of Menasha, Wis., and Northern Paper Mills of Green Bay was announced June 19 by John Stevens Jr., Marathon president.

The joining of the two Wisconsin wood pulp producers, paper manufacturers and converters brings together organizations with combined sales of more than $107,000,000 during the 1952 business year. Marathon derived its revenue (in excess of $86,000,000) primarily from the sale of packaging for the food industry and consumer paper products. Northern income (more than $21,000,000) came principally from the sale of household paper products.

The transaction, undertaken April 22 on recommendation of directors of both firms, was based on Marathon's offer to exchange six shares of Marathon common stock for each share of Northern common and five shares of Marathon common for each share of Northern preferred.

Sales expansion

"By pooling mutual interests in the consumer product line, the possibility of sales expansion is greatly increased for both organizations," Mr. Stevens said. He pointed out that the familiar Northern trade name, featured on the com-



Improved design Puseyjones Calender Stack installed on 180-inch Fourdrinier Machine. Note the streamlined frames due to improvement in roll lifting mechanism.

Modernize with a new Puseyjones Calender Stack

Many mills are replacing worn-out stacks having plain bearings with modern equipment having all rolls mounted in anti-friction bearings . . . assuring better finish, higher speeds, lower maintenance cost and greater profits.

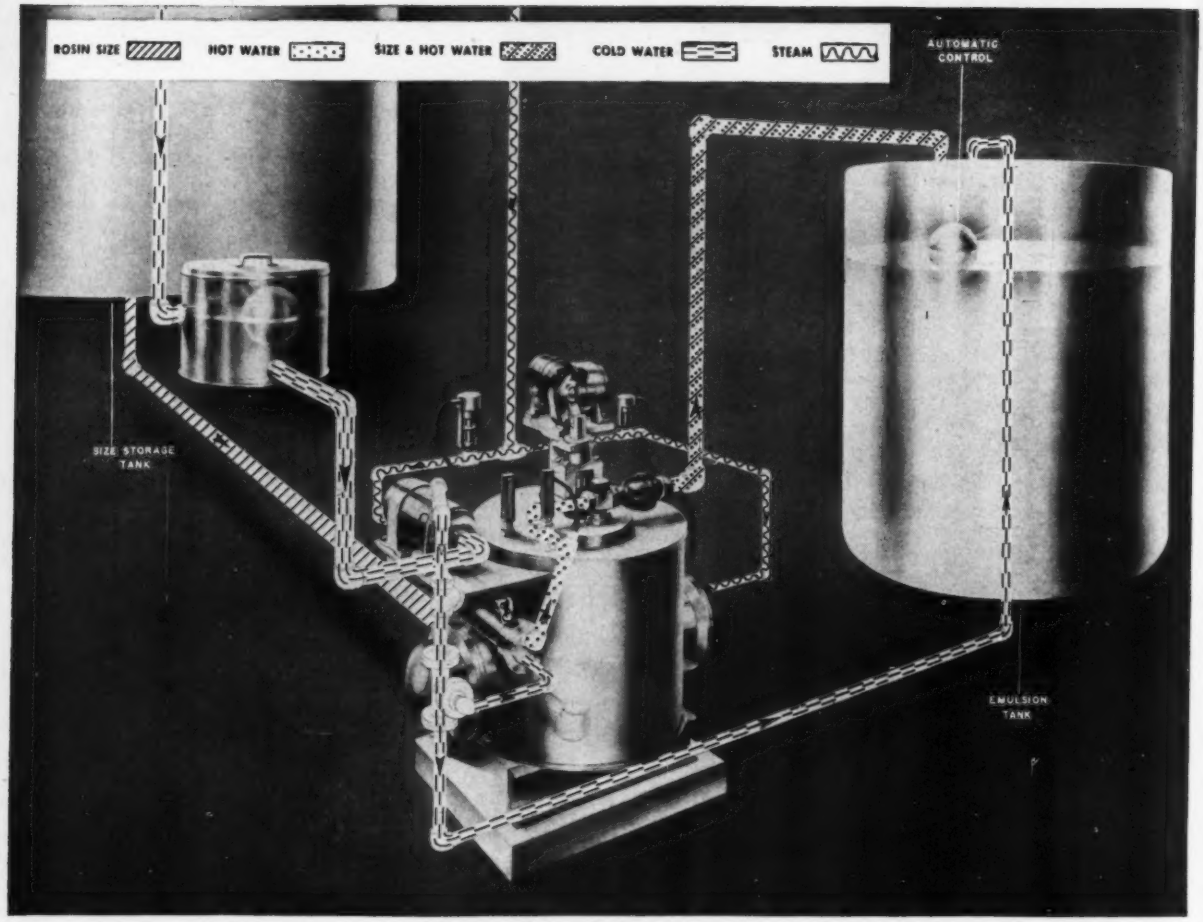
Main frames may be of heavy cast iron pattern or welded steel construction. Rolls may be of conventional chilled iron or higher grade alloy for longer wearing life and less regrinding. All roll bearings of heavy duty roller type lubricated by pressure feed oiling from an automatic circulating system. Bearing housings may be provided with Lucite observation windows. Air loading system for applying additional nip pressure.

In the latest Puseyjones Calender Stack, the lifting rods are located inside the frames on the same center line with the bearings, assuring uniform distribution of bearing loading when lifting the rolls by means of motor-operated mechanism. Latest flexible doctors may be used with pressure adjusted throw-off mechanism and motor-operated oscillating device for each doctor.

Whatever your machine rebuilding problem involves, it will pay you to enlist the experience of Puseyjones. Write or call us today.

THE PUSEY AND JONES CORPORATION
Established 1848. Builders of Paper-Making Machinery
Fabricators and Welders of all classes of Steel and Alloy Products
Wilmington 99, Delaware, U.S.A.

THE SIGN OF TRADE MARK SUPERIOR QUALITY



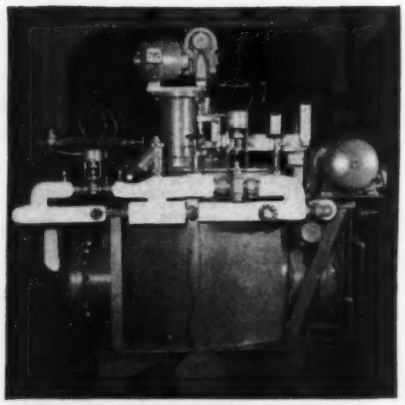
This drawing depicts the Hercules Automatic Emulsifying Process in operation, and traces the flow of rosin size, hot water, cold water, and steam to the final rosin size emulsion.

HERCULES AUTOMATIC EMULSIFIERS CUT SIZING COSTS IN OVER 60 MILLS

A steadily increasing number of paper and board mills are reducing labor costs and space requirements, while getting better uniformity in their size emulsions, with the Hercules Automatic Emulsifying Process—introduced by Hercules in 1948.

Latest figures show that more than 60 Hercules Automatic Emulsifiers are now in daily operation, and many others are being installed or on order. This represents an overwhelming majority of the total number of all automatic emulsifiers in the paper industry.

For further details, write for technical booklet.



Occupying a space of only 6 ft. by 6 ft., this Hercules Automatic Emulsifier can be conveniently placed in most paper mills.

PP53-4

SERVING YOU BETTER • THRU BETTER SERVICE •

Paper Makers Chemical Department

HERCULES POWDER COMPANY

INCORPORATED

961 King St., Wilmington 99, Del.

SIZING MATERIALS AND CHEMICALS FOR PAPER

pany's toilet tissue, paper towels and packaged napkins, will be retained.

Mr. Stevens emphasized that consummation of the transaction on June 23—by which Northern became a subsidiary of Marathon—means "business as usual" for both organizations. Several months will be required, he indicated, to stabilize operating procedures within parallel areas of Marathon and Northern.

Plans also call for retention of Northern executive and managerial experience. Milan Boex of Green Bay, Northern president and general manager, becomes a Marathon vice president and board member. William E. Buchanan of Appleton, a Northern director, becomes a member of the Marathon board of directors.

West Virginia P & P Buys Brazilian Mill

As part of its investigations of the potential of Latin America, West Virginia Pulp & Paper Co. has purchased a small integrated paperboard mill in Brazil. The facilities, which are located about 40 miles west of Sao Paulo, consist of a small pulp and paperboard mill and a modern box plant.

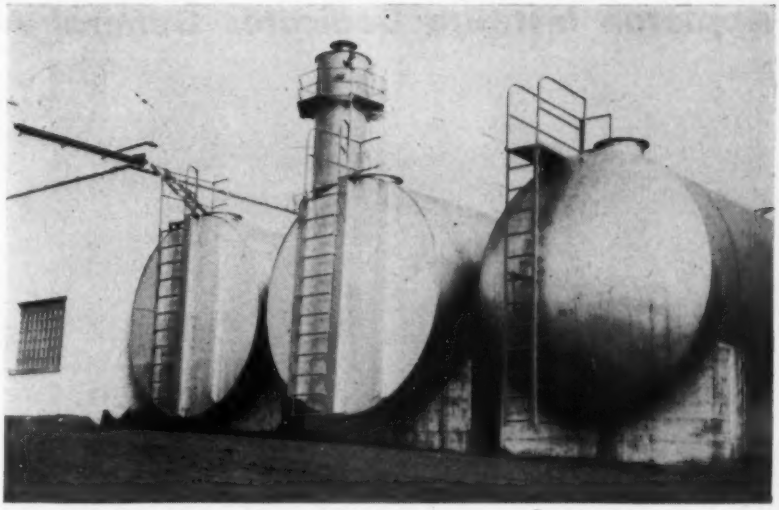
Westvaco gained control of the South American firm by purchasing 100 per cent of the outstanding stock of Ribeiro-Gerin, S. A., which established the plant in 1943. The subsidiary will be operated under the corporate title of Rigesa, S. A., which is the brand name of the products manufactured by Ribeiro-Gerin. Serving as manager of the new plant will be M. H. Collet, who has been in Brazil for West Virginia since October 1952.

Westvaco expands timberlands

West Virginia Pulp & Paper recently announced that it will purchase additional timber reserves in North Carolina as a result of a transaction completed with Richmond Cedar Works, a Virginia corporation. The paper company has exercised an option to buy approximately 136,000 acres in Dare, Hyde, Tyrell and Washington counties.

When the transaction is completed the paper firm will take title to all lands of the Virginia corporation in the four counties. Not included in the deal are physical properties such as plants, factories, mills, buildings, logging equipment and other facilities owned by Richmond Cedar Works. The purchase price will average about $5.50 per acre.

While badly cut over in the past, Westvaco foresters consider the land to have a good forest potential, which may provide the company with a good pulpwood reserve for the future. Residual stands of pine cover about half the area, and the balance is in cedar and mixtures of pine and such hardwoods as gum, oak and poplar.



AMMONIA STORAGE tanks, each of 30,000-gal. capacity; new absorption tower in the background

Wausau Paper Has New Acid Plant in Full Operation

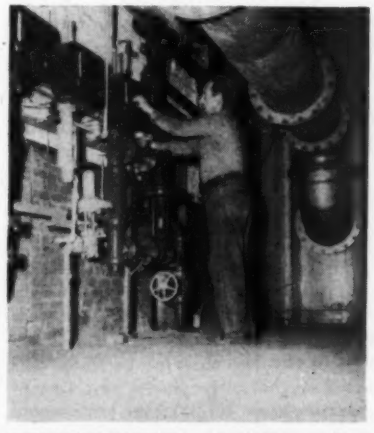
A new acid plant specifically designed to meet the increasing demands on ammonia base bisulfite acid preparations is in full operation at Wausau Paper Mills Co. in Brokaw, Wis. According to a spokesman for the firm, engineering and instrumentation are responsible "for removing old-fashioned guesswork methods."

The special absorption tower was accepted after careful study of the mill's pulp grades and cooking requirements. A 48-ft. steel cylinder, tile lined and 6 ft. in diameter, rises well above the main building and encases layers of glazed spiral rings. Some 54,000 small mixing units, stacked end on end, form a filter bed where controlled portions of sulfur gas and aqua ammonia merge with water shower sprays to form high-grade cooking acids. Circulating lines, port inlets, circular ramps and ladders are conveniently located at strategic points for easy maintenance inspection and control.

Automatic checks

Automatic controls, gauges and recorders check practically every phase of the acid plant operation. For example: (1) liquid level control at the burner; (2) automatic temperature control and recorder at the combustion chamber; (3) Rotametered water control at the spray cooler; (4) sulfur gas flow recorder to the tower, plus gas temperature regulator; (5) Rotametered control of ammonia, water, and recirculation lines; (6) a small pond cooler and pump system for converting anhydrous ammonia to aqua ammonia, and (7) automatic level control valves to acid storage tanks, plus auxiliary liquid level gauges to all storage points.

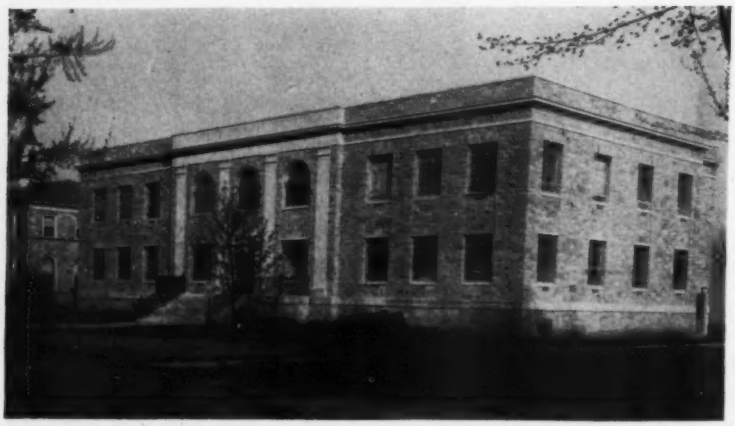
Instrument firms supplying the major portion of the equipment are The Fox-



OPERATOR CHECKS recirculation reading; sulfur gas line in background

PANELBOARD and test station where all phases of operation are controlled

Appleton Institute Dedicates General Activities Building



NEW $350,000 general activities building that was dedicated recently at the Institute of Paper Chemistry in Appleton, Wis.; more than 300 attended the ceremonies; the structure is the school's seventh major building project

RAIN FORCED dedication ceremonies inside; Ernst Mahler (l), chairman of the Institute board, presents trowel to Westbrook Steele

LOUNGE IS TASTEFULLY furnished; Institute has grown to present status from two rented rooms in the attic of the Lawrence College gymnasium in 1929; in 24 years it has expanded to eight buildings with 125,000 sq. ft. of floor space and a staff of 215

AUDITORIUM of general activities building, planned for scientific gatherings, has a seating capacity of 204; the structure itself contains 23,618 sq. ft. of floor space and houses administrative and academic offices, conference rooms, a lounge and a museum

boro Co., Leeds & Northrup Co., and Fischer & Porter Co.

New ammonia base acids are reflected in pulp cooking techniques and higher quality pulps and papers. The completely renovated features of the new plant, plus time-saving push-button control, prompt a good housekeeping climate. The firm is hopeful that the new safety features will substantially improve the chances to continue the 1,618 consecutive accident-free days already established.

Alford Cartons Buys Industrial Packaging

Industrial Packaging Co. Inc. of Brooklyn, N.Y., has been sold to Alford Cartons of Ridgefield Park, N.J. Industrial Packaging joins Alford as a subsidiary of Continental Paper Co., one of the nation's largest manufacturers of paperboard.

No changes in the personnel of either plant are contemplated at present. Norman and Sidney Rich, former owners of Industrial Packaging, will continue in full charge of all phases of that operation at the Brooklyn plant. "This merger," according to William J. Alford III, president of Alford Cartons, "in effect, rounds out the services the company is capable of rendering to users of folding boxes. It is a major step forward for both and should be mutually beneficial."

Control of American Tissue Mills Sold

The control of American Tissue Mills, South Hadley, Mass., has passed from the third generation of the founding Perkins family to Edward Krock of North Brookfield. Mr. Krock, an industrial liquidator, announced his acquisition late in May. His future course, he has declared, depends on the willingness of the 382 creditors to accept settlements that may permit the sale of the properties to interests that would resume operation.

American Tissue, once one of the nation's largest papetrie producers, was founded in 1899 and was originally called Japanese Tissue Mills. The founders were Benjamin F. Perkins and his son, J. Lewis Perkins, grandfather and father of the present owners.

The plant, employing some 300 workers, was to be at a standstill by the early part of June. Operations at factories in South Hadley and Pearl City were to be closed down, with a standby force concluding business affairs at the main office.

The firm has been in financial distress for some time. Last December the Perkins family arranged with a group headed by James Y. Scott, president of Van Norman Co. and Morse Twist Drill Co., to manage the concern. However, the arrangement was short lived, since excessive obligations incurred by the previous management "were too much to swing." C.I.T. Co., New York financial house, has a $285,000 first mortgage lien on the property, while $230,000 is owed to Armstrong Co., New York fac-

tor house that controlled American Tissue receivables. The remaining 382 creditors have total claims amounting to some $600,000. Current assets include $200,000 in receivables and $547,000 in inventory.

Reports of Dexter Closing Confirmed

Reports of the shutting down of Dexter Sulphite Pulp & Paper Co. at Dexter, N.Y., were confirmed recently with the announcement that General Manager Robert J. Hackett has become associated with St. Croix Paper Co. at Woodland, Maine. Mr. Hackett had been in charge of the Dexter operation for the last 10 years.

Meanwhile, a notice on the company bulletin board has notified employees that operations have been closed down. Expressing the hope that the shutdown is temporary but warning "that no definite assurance can be made," the notice was signed by Frank J. Lang, vice president; A. Raymond Cornwall, vice president and secretary, and Mr. Hackett.

At the same time, Mr. Cornwall, a Watertown attorney, declared that the firm's plans for the future and for its employees are "a private matter," and that there would be no statement issued. It was learned, however, that the Dexter mill is now in the process of winding up its affairs and will succumb to the pressure of Scandinavian competition.

Kenneth C. Irving of St. John's, N.B., president of Dexter Sulphite, is said to have determined to end operations at the mill that he acquired early in 1942 at a court sale. The high cost of wood for pulp and the resulting inability to compete with imported material has been given as the motivating factor.

St. Regis Sells Georgia Sawmill

St. Regis Paper Co. has announced the sale of its sawmill at Fargo, Ga., to Suwannee Longleaf Mfg. Co. The terms of the sale included an agreement with the purchasing firm allowing St. Regis to buy stumpage equal to a minimum of 12,000,000 board feet per year from the Suwannee tract, which the paper manufacturing firm holds under a long-term lease. The agreement is to run for 10 years.

The Fargo mill, which has a capacity of 1,000,000 board feet a month on a single shift basis, was built by St. Regis in 1949 not long after the firm had acquired the management rights to the 220,000-acre Georgia timberland for a period of 60 years.

G. R. Lyons of Alberta, Ala., former president of Frost, Sibley Lumber Co., is president of newly formed Suwannee Longleaf; J. P. Driver of Selma is secretary, and D. Lyons general manager.

211-FOOT barge that has been put into service transporting paper stock from St. Regis Paper Co.'s mill at Bucksport, Maine, to Chicago

Time Inc. Transports Paper Stock 1,700 Miles by Water

SPECIALLY DESIGNED barges are transporting paper stock from St. Regis Paper Co.'s mill at Bucksport, Maine, to Time Inc. warehouses at Chicago. The 1,700-mile trip requires an average of 14 days.

Early in May the latest vessel to enter the Maine-to-Illinois service was launched for *Time* at the Dravo Corp. shipyard in Wilmington, Del. Christened the *C. L. Stillman*, the vessel is the sister craft to the world's largest sea-going barge, the *N. L. Wallace*, and honors the executive vice president of Time.

The 211-ft. vessel is capable of carrying enough paper stock in one trip—2,000 tons—to print some 4,000,000 copies of *Life*. It has a beam of 43 ft. and is 16 ft. in depth. The cargo hold is equipped with rolling water-tight hatch covers that safeguard the high-grade paper that is used for *Time*, *Life*, *Fortune*, and other of the firm's publications. Moreover, a reduction in the number of times the rolls of paper have to be handled has eliminated other damage hazards.

On trips from Bucksport to Chicago, the barge is towed or pushed down the Atlantic coast, up the Hudson River, through the New York State Barge Canal, and across three of the Great Lakes. Equipment includes electric bilge, ballast and washdown pumps. On return trips from Chicago, the vessel carries grain or other bulk cargo. In three hours it can be loaded with 65,000 bushels of grain.

During the winter months, when the barge canals are closed by ice, the barge operates to Philadelphia, where a part of each week's issue of *Life* is printed by Cuneo Eastern Press. The round trip between Bucksport and Philadelphia requires about eight days.

Of welded steel construction throughout, the vessel carries the highest classification of the American Bureau of Shipping. It is also classified by the U. S. Coast Guard for coastal, river, and lake operations.

Tugs of Moran Towing & Transportation Co. tow the vessel on the trips to Chicago. Each barge has a notched stern to hold the bow of the tug during narrow-channel pushing. In open water along the coast or on the lakes the barge is towed behind the tug.

Kimberly-Clark Studies Insect and Disease Damage at New Laboratory

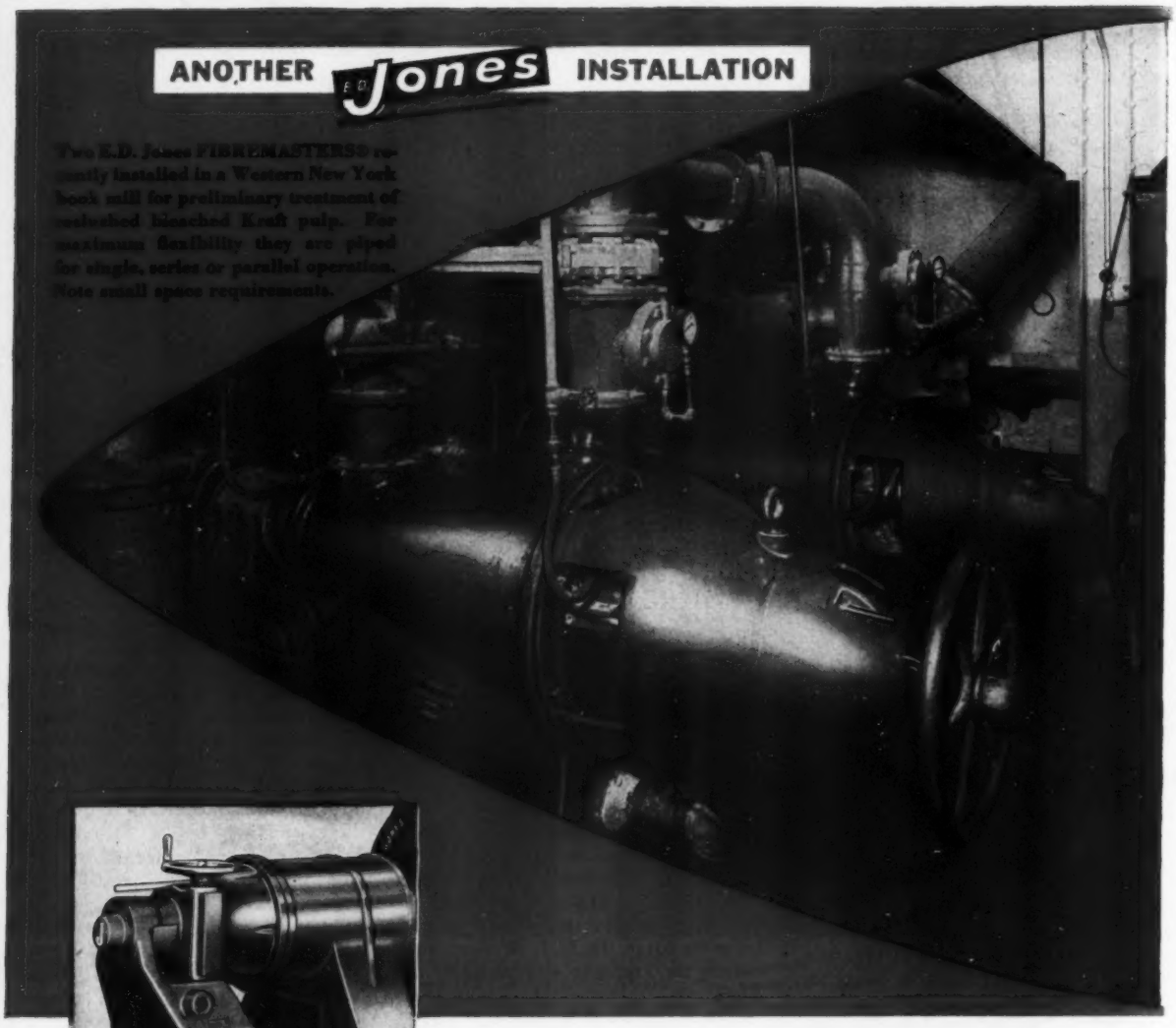
With insects and disease now causing more timber loss than fire, Kimberly-Clark Corp. of Neenah, Wis., is operating a forestry laboratory at Iron Mountain, Mich., for the purpose of conducting research on these enemies of the woods. Manned by forest pathologists and entomologists, the laboratory is reported to be the first of its kind established by private industry.

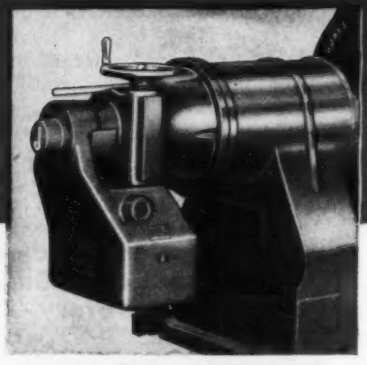
Woodland executives of Kimberly-Clark have declared that increasing knowledge of forest management "forces us to know more about insects and diseases that damage trees. In past years, fire in our forests caused the greatest loss, and its spectacular nature attracted great attention. Today, fire controls have reduced that cause of forest damage. Now, we must turn our efforts toward other causes of loss to our trees and pulpwood.

"... We know that intensive management of forests will develop more trees

ANOTHER E.D. Jones INSTALLATION

Two E.D. Jones FIBREMASTERS® recently installed in a Western New York book mill for preliminary treatment of unbleached bleached Kraft pulp. For maximum flexibility they are piped for single, series or parallel operation. Note small space requirements.





Now available with ACCRU-SET®
— automatic plug adjustment

This latest triumph of Jones engineering provides completely automatic, completely reliable finger-tip control of plug adjustment for uniform, predetermined power throughout your stock run. Guarantees more uniform stock treatment, less operating horsepower, protection for plug and shell bars if power or stock flow fails.

Easily installed on any Jones Jordan, Fibremaster or Refiner. Write today for details.

MINIMUM Floor Space MAXIMUM Results

The simplified, rugged design of the FIBREMASTER requires relatively little floor space. Yet it has *twice* the capacity of the famous Jones High-Speed Refiner . . . and without sacrificing any of the features that have made the smaller machine so popular.

As a general utility unit on all stocks from news to rag, the Fibremaster combines flexibility, improved stock control, economy of power and low maintenance cost. Ask your Jones representative for details or write for Bulletin *EDJ-1035.*

E.D. Jones

E. D. Jones & Sons Company
Pittsfield, Mass.

BUILDERS OF QUALITY STOCK PREPARATION MACHINERY

on the ground. If these can be carried through to merchantable sizes, they will produce a higher yield in the same amount of time as can be obtained from a natural stand without any treatment. This more than justifies the expense involved in laboratory work."

Attack white grubs

One of the initial projects involves the study of white grubs, which have been causing considerable damage on Kimberly-Clark tree plantations. Experiments are being conducted to discover what type of insecticide can be put on the roots before planting to kill the grubs when they attack the roots after planting.

Another study under way concerns balsam fir tree decay that attacks the inside of the trunk and makes it unfit for pulpwood use. Research men are going out into the forest looking for conditions that predispose such types of decay. They are checking quality of soil and making studies to find out whether faster growing trees are more affected by decay than the slower growing species.

South's Pulpwood Cut Sets Another Record

In 1952—for the third straight year—the South harvested a record amount of pulpwood and easily kept its position as the nation's chief pulpwood producing region. A report released by the U.S. Forest Service shows that the 12 southern states last year cut a total of 14,600,000 cords of pulpwood. This was considerably more than half of the total United States cut of 25,000,000 cords.

W. S. Stover and J. F. Christopher of the Southern Forest Experiment Station at New Orleans estimated that the pulpwood cut in 1952 was nearly 4 per cent larger than in 1951 and 17 per cent greater than in 1950. All southern states except Virginia and Oklahoma showed increases. Alabama, Georgia and Louisiana showed the biggest gains.

Georgia was the South's leading producer, with 2,500,000 cords. Mississippi ranked second with 1,800,000; Alabama and Florida were next with approximately 1,600,000 each; all other states except Arkansas, Tennessee and Oklahoma produced more than 1,000,000 cords.

Probable lead in manufacturing

It has been estimated by Mr. Stover and Mr. Christopher that the South probably also leads the nation in manufacturing capacity for turning raw wood into pulp. At the close of 1952, they reported, the region had 63 pulp mills with a total daily capacity of 26,900 tons. Six new mills, with a projected daily capacity of more than 2,300 tons, were under construction.

Louisiana's eight mills lead the South with a total capacity of 4,600 daily tons.

1952 Mill and Pulpwood Data for the South

State	No. of Mills	Mill Capacity (tons per day)	Pulpwood Produced (000 cords) 1950	1951	1952
Alabama	7	1,973	1,321	1,406	1,609
Arkansas	2	975	604	614	620
Florida	9	4,290	1,385	1,490	1,583
Georgia	7	3,640	2,221	2,370	2,515
Louisiana	8	4,560	883	1,111	1,235
Mississippi	6	2,453	1,666	1,793	1,865
N. Carolina	5	2,250	1,024	1,305	1,332
Oklahoma	—	—	39	45	35
S. Carolina	3	2,836	1,183	1,251	1,276
Tennessee	4	380	144	192	268
Texas	2	1,000	922	1,158	1,160
Virginia	10	2,508	1,044	1,326	1,069
TOTALS	63	26,865	12,436	14,061	14,565

Florida has nine mills capable of turning out 4,300 tons per day; Georgia ranks third in mill capacity and South Carolina fourth.

More and more hardwood is being used for pulp, the U.S.F.S. report continued. Last year hardwood accounted for 1,700,000 cords of the South's total, a gain of 17 per cent over 1951. This trend is encouraging, according to Mr. Stover and Mr. Christopher, because the South has a rather plentiful supply of hardwood trees suitable for pulpwood, while pine is at a premium.

Rhinelander Paper Co. Celebrates Golden Anniversary at Modern Mill

THE NATION'S LARGEST producer of glassine and greaseproof papers celebrated its 50th anniversary in June. Rhinelander Paper Co. of Rhinelander, Wis., whose products today are used in the protective packaging of thousands of items, completed its first half century of operation. During that time the firm grew from a small, two-machine mill to the largest in the state under one roof.

Founded in 1903, Rhinelander's first papers were newsprint and manila wrapping. In 1907 it introduced a butcher's wrapping paper known as "King William" which quickly became the standard meat wrap in the butcher shops of the time. The first runs of glassine and greaseproof were turned out in 1916. Since that time the bulk of production has been in these two grades.

Grows with packaging era

World War I furnished the impetus for the development of these papers in the United States. Glassine and greaseproof originated in Europe, and Rhinelander was one of the first mills to visualize their possibilities. Glassine offered an economical, effective packaging medium to the protective packaging industry, then in its infancy. Today, about 90 per cent of Rhinelander's production is used in the food field.

The firm has had only four presidents in 50 years. The founders were Anderson, Webster and Edward Brown, in addition to several other Rhinelander citizens. Anderson Brown served as president until 1923, when he was succeeded by Webster E. Brown. Edward Brown followed and served until 1930. In that year Folke Becker was elected president.

Mr. Becker, born in Sweden and educated in Germany, came to this country in 1914. He joined Rhinelander in 1925 as a technical consultant and was made general superintendent within the year. Previous to becoming associated with Rhinelander, he had operated Westfield River Paper Co.

Under Mr. Becker's direction the firm was to triple in size in some 18 years. Since 1937 four paper machines have been added, to bring the mill's total to eight. Two of these are the "Big Swede" and the "Ripco Maid," the nation's largest glassine-greaseproof machines, which measure more than 350 ft. in length and turn out paper at the rate of 10,000 tons apiece each year.

Many other improvements have been made, notably the additions in water filtering capacity (approximately 30,000,000 gal. per day), power (more than 300,000 kw every 24 hours), and in the new semichemical pulping process.

Yet another outstanding Rhinelander accomplishment is the By-Products Di-

Folke Becker, president of Rhinelander Paper Co.

AIR VIEW of Rhinelander plant, largest mill in Wisconsin under one roof

RIPCO MAID, one of the largest glassine-greaseproof machines in the U. S.

vision. Completely divorced from the papermaking operation, this division consists of a torula yeast plant and an evaporating plant and succeeds in making useful products from the non-fibrous solids extracted from pulpwood and formerly discarded into the Wisconsin River. In effect, this part of the Rhinelander mill is solving two problems. First, there is the stream pollution enigma that faces every sulfite mill. Secondly, utilizing these solids, Rhinelander is fast approaching realization of 100 per cent wood use.

In 1948 a torula yeast plant was built at Rhinelander. Its prime function was to remove sugars from the pulp mill extract. It was the first commercial scale unit of its kind in this country, and construction culminated years of research. This plant was built by Lake States Yeast Corp., composed of one Michigan and 10 Wisconsin sulfite mills. Though it cost more than $500,000, it was established purely as a pilot plant. In 1950 Rhinelander purchased the installation and has been operating it since as a wholly owned subsidiary. Today, the operation produces highly nutritive food yeast that is used as an ingredient in prepared foods for both human and animal consumption.

All collectible extract from the sulfite mill is routed to the yeast plant, where the sugar is converted to yeast. By removing sugars from the wood extracts, approximately 65 per cent of its oxygen-consuming properties is eliminated.

Until last year, desugared extract from the yeast plant was returned to the river. It now is piped to the evaporating plant, where it is converted into solids (powder) and 50-50 concentrates. To date, the marketing of the product, Toranil, has been confined to uses such as a dispersing agent or bases for adhesives. However, research indicates there will be many other applications.

Outlook Good for Remainder of Year, Dept. of Commerce Reports

THE PULP, PAPER and board industries operated at a high level during the first quarter of 1953 and, according to the Department of Commerce, they expected to continue at this rate during at least the second quarter. The outlook for the entire year is considered good.

For the most part, a general stabilization has developed in the market for practically all grades of, paper, paperboard and products. The supply-demand relationship for the past several months has been in approximate balance for the majority of grades and products, with no significant shortages or surpluses to plague buyers or sellers. One of the most important aspects has been that the inventory adjustment cycle of 1951-52 came to an end, with the majority of converters, merchants and consumers operating on what they consider satisfactory stock-sales ratios. There appears to be a desire to try to further reduce inventories, but in order to meet competition through adequate customer service it has been found necessary for converters and merchants to maintain suitable balanced stocks for prompt delivery.

Over-all steadiness

The over-all steadiness in the market during the first quarter of 1953 was reflected in a general firmness in prices at the mill level. The only notable segment of the industry that encountered some slackening in operations has been the non-integrated mills that must purchase their pulp, waste paper, or other fibrous materials. At least some of the mills in this segment have had to curtail production to four or five days a week during the past several months, since many buyers have become more discriminating on quality and price.

As of March 1953, the non-integrated mills accounted for 28 per cent of the total paper and paperboard production, compared to 30 or 31 per cent in the period of "shortages" in early 1951; in similar comparison, non-integrated paper mills now account for 14.5 per cent of all paper, as against 17 to 18 per cent in 1951, while non-integrated paperboard mills now account for 41 per cent of all paperboard, as against 44 to 45 per cent in 1951.

According to the Department of Commerce report, which was prepared by W. LeRoy Neubrech, special assistant to the director of the Forest Products Division, there has been an easing in prices on waste paper and pulpwood in most regions. (Some operating costs at mill levels have been advancing, such as labor, transportation, and operating supplies.) Mills in the Lake States, northeast, and Appalachian regions in particular had accumulated excess pulpwood inventories, and as a result of lessened buying in the past winter's logging season, prices on purchased wood declined moderately.

Aggregate costs increasing

For many mills, efficiency of production has been increased through modernization of equipment or installation of new machines. This combination of factors has meant that increased costs on some items have been partly offset by reduction in other items, but nevertheless aggregate costs are increasing. Furthermore, many mills report smaller order backlogs, with new orders running in lesser tonnages, causing some difficulty in scheduling machine runs, more

The NEW Type J Johnson Joint

ALSO OFFERS SAVINGS IN SIZE, WEIGHT AND COST —AND EVEN LONGER LIFE

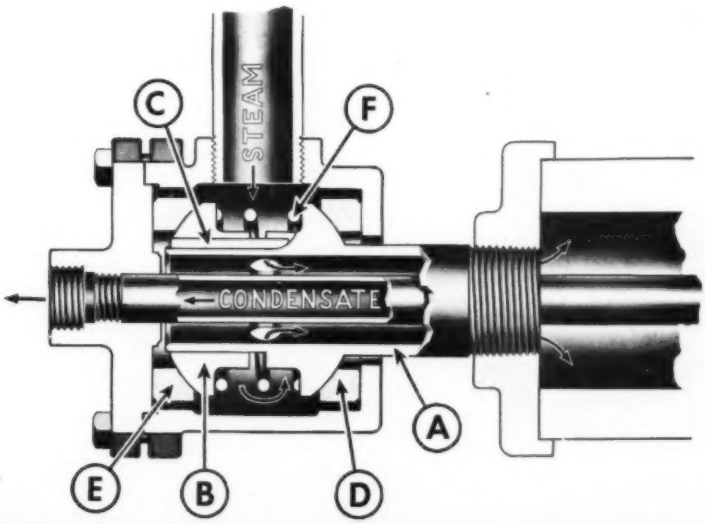
In this new Type J you have all the advantages of Johnson Joints in a smaller size, lighter weight design. It has carbon graphite seal rings which are thicker at the web and can increase service life as much as 40%. Yet it costs less than before.

These are basically the same Johnson Joints which have written an unequalled service record, and which have been adopted almost unanimously by machinery manufacturers. They have no packing of any kind, need no lubrication whatsoever, and adjust automatically for varying pressures. Their simplicity of design makes them easy to service or repair right in the field.

Besides reducing costly, hard-to-handle bulk, the new Type J brings many other refinements. The inlet is now in the side of the body, which makes easier both the piping hook-up and the task of properly centering the joint. The head design has been simplified to permit condensate outlet connection in any direction. There is also provision for a special assembly plate to facilitate removal of modern mechanical syphon pipes.

It has always been true that Johnson Joints quickly pay the cost of switching over, but never more so than right now. If you haven't yet changed to Johnson Joints don't fail to get all the facts.

Type J Johnson Joints are available for either through flow or syphon pipe service, and for all operating conditions. Models are also available with lugs cast on body for rod supports. Write for new bulletin.



The New Type J Johnson Joints

Nipple (A) is connected to roll or drum. Collar (B) is keyed at (C) to rotate with nipple, but fits loosely so pressure can fill entire housing. Seal ring (D) and bearing ring (E) are of special carbon-graphite; they eliminate all packing and are completely self-lubricating. Spring (F) is for initial seating only; in operation pressure is sealing force. Note self-aligning characteristics — the space around rings and nipple to provide for lateral movement of rotating assembly, and the spherical seating for angular movement.

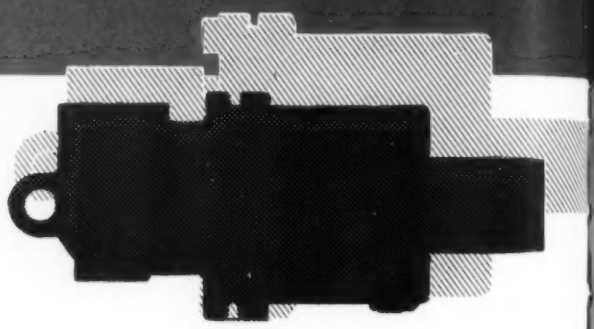
Products of The Johnson Corporation

Wood Street, Three Rivers, Michigan

Rotary Pressure Joints • Compressed Air Separators and Aftercoolers
Direct Operated Solenoid Valves • "Instant" Steam Water Heaters

The NEW Series 2000

TYPE S JOHNSON JOINT



See for yourself how the more compact, lighter weight Series 2000 Type S compares with the old design. Price tag is smaller, too, yet life of wearing parts is increased as much as 40%.

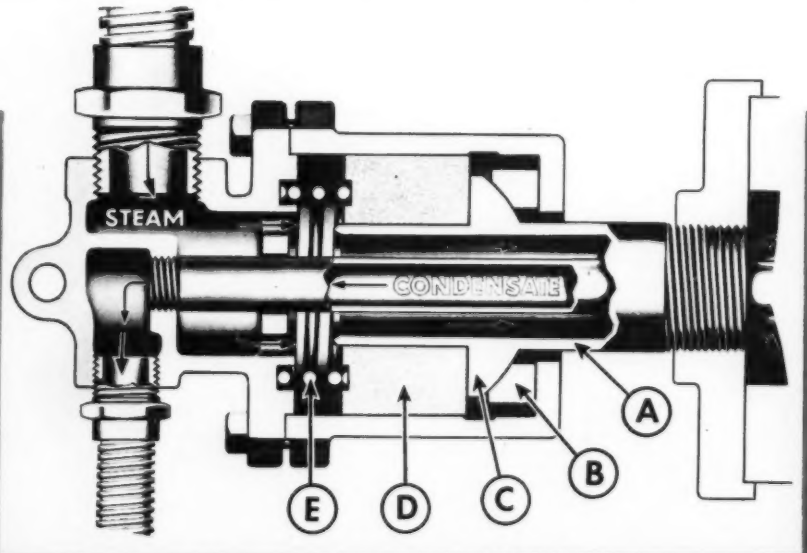
SAVINGS IN SIZE
SAVINGS IN WEIGHT
SAVINGS IN COST
EVEN LONGER LIFE

The Type S Johnson Joint was big news when it was first introduced — as the self-supporting version of a device that was already the best known, most widely used of its kind. Now comes bigger news than ever!

Now Johnson offers the *brand new Series 2000* Type S. It's smaller in size, lighter in weight, and lower in price. At the same time the effective size of the carbon-graphite seal rings has been increased, thus lengthening service life as much as 40%.

It still remains completely packless, self-lubricating and self-adjusting. It still offers a complete answer to any threat of misalignment since its self-supporting design shifts as the roll shifts. In short, it piles important new advantages on top of the time-proved ones, and costs less in the bargain.

The new Series 2000 Type S Johnson Joints are available for both through flow and syphon pipe service, in sizes from ¼" to 4". Get all the facts; write for new bulletin.



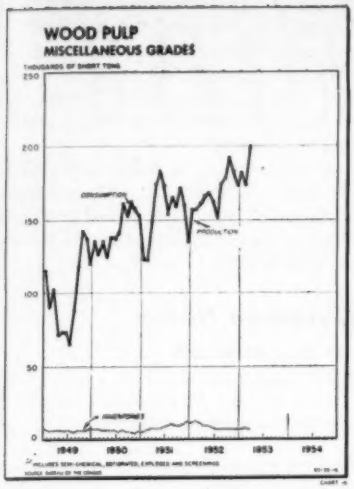
Series 2000 Type S Johnson Joint

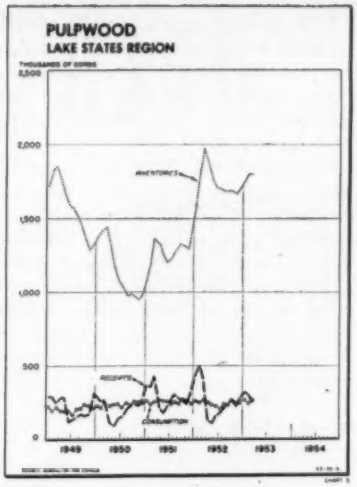
Cross-section view shows how nipple (A) is connected to roll. Carbon-graphite seal ring (B) rotates against convex surface of collar (C). Joint assembly is supported by guide (D), which is also of long-lived, self-lubricating carbon-graphite. Spring (E) is for initial seating only; in operation joint is pressure-seated.

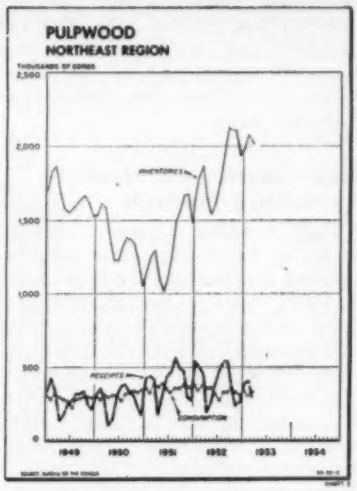
Products of The Johnson Corporation

Wood St., Three Rivers, Michigan

Rotary Pressure Joints • Compressed Air Separators and Aftercoolers
Direct Operated Solenoid Valves • "Instant" Steam Water Heaters







costly trims, and more frequent changeovers on grades.

The industry continues alert and progressive in quality, improvements, and in the development of new products, the Department of Commerce report continues. Through intensive research it has been able to maintain a steady growth in markets and production.

In basic manufacture, new pulping processes are increasing aggregate pulp yields from each cord of pulpwood and at the same time improving the qualities and characteristics of individual grades of pulp. The most prominent development currently becoming more and more evident is the semichemical process.

Comparing the first quarter of 1953 to the same 1952 period it is noted that total United States wood pulp production was up 72,000 tons, or 1.7 per cent, whereas pulpwood consumption was up only 24,000 cords, or 0.3 per cent. In other words, the national pulp to pulpwood ratio is increasing. The ability to use in the semichemical process almost any specie of tree, whether softwood or hardwood, has greatly increased the timber resources available to the industry and is fostering better conservation and forestry practices.

Summary

Pulpwood: National receipts of pulpwood in the first quarter of 1953 were down 750,000 cords, or 9.8 per cent below the first quarter of 1952. Even though consumption in the first quarter was only 0.3 per cent above a year ago, inventories were still 1.3 per cent higher at the end of March than on March 31, 1952.

The northeast region is still prominent, with inventories at the end of March 9.3 per cent above last year, even though receipts dropped 25.7 per cent. In the Lake States, receipts declined 34.9 per cent in the first quarter and brought inventories down to 8.4 per cent below a year ago March. On the West Coast, pulpwood stocks are currently somewhat in excess of two months' consumption requirements, while in the South wood inventories are equal to about three weeks' supply.

Wood Pulp: New supplies of wood pulp were fully adequate to meet all needs in the first quarter of 1953. Not alone was domestic production up 1.7 per cent over the first quarter of 1952, but imports increased 6.8 per cent in like comparison. The supply of foreign pulp disclosed a changed pattern, with supplies from Canada declining 10.8 per cent, while imports from Sweden, Norway and Finland were up 153 per cent, 117 per cent, and 40 per cent respectively.

Consumption of wood pulp for all uses was up 3 per cent in the first three months of this year, as compared to a year ago, with paper and board mill use being up 3.3 per cent and non-paper down 5 per cent. Sulfate, semichemical, defibrated, and exploded grades are up materially over the first quarter of 1952, while other grades show declines.

Waste Paper: The continued large domestic production of paper and board, plus imported newsprint, has resulted in large supplies of waste paper being available for salvage. With larger supplies of wood pulp also available, however, the aggregate demand and consumption of waste paper is currently less than in the 1951 period of pulp shortages. As a consequence, a smaller percentage of available waste paper is being collected and utilized than two years ago.

However, compared to early 1952, when production of paperboard was at a relatively low level because of the inventory adjustment cycle, waste paper consumption was up 10 per cent in the first quarter of 1953. Since abundant supplies of most grades of waste are available, mills have not been too interested in maintaining high inventories. Stocks at the end of March this year were down 12 per cent from a year ago.

Paper and Paperboard: Total paper and board production of all grades in the first three months of this year was 5.9 per cent above a year ago. However, paper production was down 5 per cent, paperboard up 16.5 per cent, wet machine board up 24 per cent, and construction paper and board up 13.5 per cent.

There was substantial variation in the production of the major grades of paper and paperboard during the first three months of this year. Only five grade groups of paper showed increases. They were: tissue paper, up 11.5 per cent; absorbent, up nearly 10 per cent; sanitary, up 4 per cent; uncoated book, up nearly 3 per cent, and machine coated, up 1 per cent. Other grades showed declines ranging from about 5 per cent for some grades to as much as 16 per cent for fine papers and 26.5 per cent for unbleached kraft. All grades of paperboard showed noticeable gains as compared with the first three months of 1952. Most prominent were: container board, up 18.4 per cent; bending boards, up nearly 15 per cent, and non-bending boards, up 15.3 per cent.

Bathurst Power & Paper Continues Improvement

Continuous improvement at the Bathurst Power & Paper Co. Ltd. mill at Bathurst, N.B., is adding to the efficiency of the plant. Among the latest installations are a Cameron winder and a Pope-type reel on No. 4 machine.

The latest causticizing equipment is being installed at the kraft mill to replace the old caustic plant and was expected to be ready by mid-summer. Recently completed was the construction of an outside black liquor storage tank of 300,000 gals. capacity for kraft cooking liquor.

No. 3 paper machine has been equipped with a new fourdrinier and

new headbox, 120-foot wire slice and machine chest. Automatic lubrication and filtration systems have been added to No. 4, as have Centricleaners and a breaker stack.

New Alberta Mill Planned by Building Products

Ralph R. Moore, minister of economic affairs for the Province of Alberta, has revealed that Building Products Ltd. is beginning immediately to construct a paper mill adjacent to its roofing plant in Edmonton.

The property required for the expansion is already owned by the firm, and it is understood that the paper machine and a considerable amount of the auxiliary equipment have been purchased. It is expected that the mill will be in operation early next year.

Foley Sees Better Times for B. C.

An end to the Korean War will be a boon to the pulp and paper industry in British Columbia, according to Harold S. Foley, president of Powell River Co. Ltd. He pointed out that in the middle '30s trade with the Orient was extensive and profitable, especially in newsprint. Today, shipments of pulp to the Far East are limited, and newsprint sales are extremely small.

Although Powell River had a record year in 1952 for newsprint production, Mr. Foley declared, the net profit was considerably less than in 1951. This was generally true in the pulp and paper industry in British Columbia, due primarily to the exchange rates on U.S. funds, the increased costs of production, higher income tax, and adverse market conditions.

Pacific Mills Sets Up Model "Company Town"

In contrast to the practice of industries in the isolated areas of British Columbia of establishing "company towns," Pacific Mills Ltd. has announced a new policy setting up model townships. Workers can purchase their own lots at a low price, and houses are sold on reasonable terms.

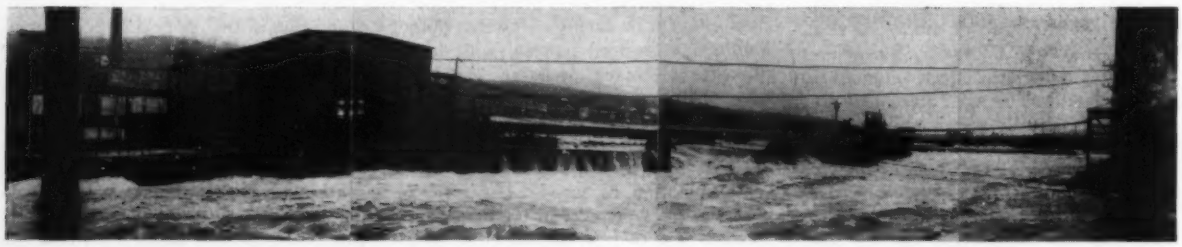
At the Ocean Falls pulp and newsprint mill of Pacific Mills lots with 60-foot frontages on improved streets are selling to employees for $1. Houses erected are priced at from $9,000 to $13,000 and have easy purchasing terms. Sewers, water lines and sidewalks are being installed by the company.

A similar plan is being followed at the new Elk Falls Co. Ltd. newsprint plant, which is partially owned by Pacific Mills, a Canadian subsidiary of Crown Zellerbach Corp.

Canadian Notes

The Last Road Link
connecting Powell River, B.C., with Vancouver via direct road and ferry service is under construction.

England's Best Source
for big timbers and clear lumber will always be British Columbia, according to Henry Brandt, London lumberman and banker. Britain has yet to purchase 4 to 6 billion board feet to make up its 1953 lumber requirements. She may buy from B. C. if she can obtain in large quantities and if she can reduce the outstanding balances for timber bought in 1952.



PANORAMIC VIEW of surging floodwaters that swept through Brown Co. installations at Berlin, N. H., in April

Brown Co. Survives "Worst Flood in 17 Years" on Androscoggin

ANGRY FLOODWATERS on the Androscoggin River at Berlin, N.H., pounded at the pulp and paper mill installation of Brown Co. early in April. Although damage was heavy, teamwork and heroism saved much of the firm's valuable equipment and properties.

The river, according to a Brown Co. dispatcher, reached a crest of 17,540 cu. ft. per sec. at its peak. This compares to a normal flow of 2,000 cu. ft. The havoc that resulted from the high water was the worst experienced by the northern New Hampshire community in 17 years. Highways and railroads in many sections suffered washouts, while industrial areas were severely damaged.

Tales of heroism and teamwork among Brown employees were left in the

PULPWOOD lodges in racks under Bermico office

WALLS and underpinnings of plants threatened

A WINNING HAND...

. . . in Dryer Felts!

Each *HOOPERWOOD* dryer felt is scientifically designed to meet specific drying conditions. Cotton or Asbestos . . . there is a *HOOPERWOOD* felt to help YOU win the battle of rising costs.

WM. E. HOOPER & SONS CO.

General Sales Offices: Juniper & Cherry Sts., Philadelphia 7 • 320 Broadway, New York 7 • 300 W. Adams St., Chicago 6

Hooperwood Mills: Woodberry, Baltimore 11

Quality Paper Making calls for OK BRAND STARCHES

for tub, beater and calender sizing— for coating and adhesives

FREE TECHNICAL SERVICE!

Some of the industry's outstanding experts in the use of starch in paper making are on the staff of Hubinger's famous laboratories. You are invited to consult these experts on your production problems—without cost or obligation on your part.

...the Stamp of Quality!

THE HUBINGER CO. (EST. 1881), KEOKUK, IOWA

Branch offices: New York • Boston • Charlotte • Chicago • Los Angeles

MANY mainline tracks of B&M were flooded

RAILROAD deliveries continued even in high water

wake of the flood. Spokesmen for the firm reported that men from the Woods Department "worked their hearts out" battling the storm-driven water as it rolled into the highly industrialized city. Their work saved thousands of dollars in pulpwood, expensive machinery, and other equipment. "These men knew why they were working hard," said a Woods Department official in commenting on the work done at Errol Dam. The structure was the key in preventing further destruction to such towns as Berlin, Milan, Gorham, and Shelburne.

During the crest of the flood, crews under the direction of Milt Harriman and Alton Oleson worked night and day fighting to prevent 40,000 cords of pulpwood from "taking the long trip to the Atlantic." As it was, about 20,000 cords of wood and thousands of tons of ice were sluiced at Errol Dam to reduce the threat of damage to that structure.

In Berlin torrents poured down the river, pulling flashboards off five dams and causing heavy damage to the Shelburne hydro station, where high water overran the operating floor and flooded generators. According to the Power and Steam Department, all stations received damage from the flood.

At the Burgess plant a shutdown was necessary for nearly 24 hours when the filters became plugged. However, production at the kraft plant continued.

An outstanding job of sandbagging protected the north end of the Cascade boiler plant. Crews of Brown Co. employees worked steadily to keep the surging Androscoggin from damaging the costly equipment and the newly developed parking area.

Paperboard Cartons With Built-In Spouts Developed

A built-in pouring spout for paperboard cartons that snaps shut with a positive seal has been developed by Henry F. Phillips, a California inventor. Harry L. Phillips, son of the inventor and president of Delaware Pacific Corp. at Oakland, which firm holds exclusive world-wide license rights, said that Container Corp. of America has been licensed to use the patented spout. Container Corp., Mr. Phillips declared, is preparing to go into commercial production of the spout, which is known as "Flo-Seal."

Another privately owned company will share with Delaware Pacific the royalties as well as the expenses of the enterprise. That firm is Flo-Seal Corp. The company holds the patent rights to the die-making machinery. Royalties will be 4 per cent of the selling price of the cartons f.o.b. point of manufacture.

The Flo-Seal spout is an integral part of the carton itself and is formed by making the die inserts a part of the cutting and forming process. As delivered to consumers, the spout forms an airtight seal that is claimed to be infestation and sift proof. When the spout is open, the product may be poured accurately without spillage or waste, with the size of the pouring stream readily adjustable.

In the granulated field, the Flo-Seal spout is adaptable to soaps, detergents, flour, salt, sugar, rice, cereals, spices, seeds, tooth powder, etc. The key to successful mass production has proved to be the special die inserts that are sold to licensees at costs ranging from $2.50 to $3.00 a set, depending on the size of the inserts. The inserts, manufactured by Fain Die Works at San Leandro, are furnished to Delaware Pacific licensees.

The inventor, Henry Phillips, is the man who developed the Phillips recessed head screw that is in general use by practically all major manufacturers in the United States.

Hardwoods Provide Stronger, Cheaper Pulps

The manufacture of stronger pulps at lower cost is possible as the result of a development announced early in June by a research assistant at the New York State College of Forestry in Syracuse. The process utilizes hardwoods and was reported by Dr. Robert M. Husband at the spring meeting of the Empire State Section of Tappi.

He said in a paper on the semichemical pulping of hardwoods that Forestry College researchers had prepared semichemical pulps of improved strength from birch and maple woods cooked with less than half the amount of chemicals commonly recommended for the neutral sulfite process.

Researchers have also converted birch wood into a high-yield chemical pulp suitable for bleaching and high-grade paper, Dr. Husband reported. Commercial application of the developments, college officials said, would facilitate the use of northeastern hardwoods in pulp making.

Government Claim Against Consolidated Dismissed

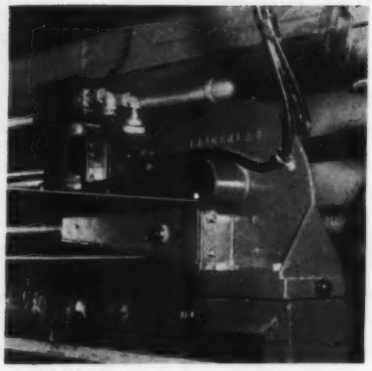
In the case involving efforts by the federal government to obtain forfeiture of 2,100 cords of pulpwood belonging to Consolidated Water Power & Paper Co. of Wisconsin Rapids, Wis., the U. S. Circuit Court of Appeals in Chicago has handed down a decision in favor of the firm and ordered dismissal of the government claim.

The action arose out of the transportation of the pulpwood across Lake Superior in a raft September 16, 1951. The wood, valued at $35,000, was shipped from Sugar Loaf Bay in Minnesota to Ashland, Wis.

The government sought forfeiture by claiming that the tug *Rocket* was engaged in coast-wise transportation in violation of maritime regulations. The *Rocket,* owned by Newaygo Timber Co. Ltd., a Canadian subsidiary of Consolidated, was under Canadian registry.

The paper manufacturing firm contended that the tug was used in towing wood from storage booms to towing booms, which was merely handling cargo prior to actual transportation by the company-owned tug *Butterfield.* The

Beta gauge recorder at Eastern Corp.



Beta gauge detector head at Bangor mill

Eastern Corp. Installs Beta Gauge at Maine Mills

By permission of the U.S. Atomic Energy Commission, Eastern Corp. has installed a Tracerlab beta gauge at its Bangor, Maine, mill. The instrument is the first of its kind to be used in the New England area. Being of the absorption type, it continuously measures and records any deviation in the basis weight of paper, as it is being formed, by means of a small beam of beta rays.

The beta gauge consists of four basic elements: a source of beta radiation; an ionization chamber to detect and convert beta radiation to electrical current; a preamplifier to boost the current to measurable levels, and a meter to indicate fluctuations in this current. The source of radiation and the ionization chamber are mounted on the opposite ends of a sturdy "C" clamp mount constructed so that the web of paper to be measured passes through the gap between source and chamber without contact. The head is located just ahead of the surface sizing operation.

The rays, which are streams of high energy electrons, are emitted by a sealed radioactive source and pass through the sheet to be measured. Variation in sheet thickness increases or decreases the number of electrons absorbed by the sheet of paper. Any change in the amount of radiation passing into the detecting head brings about a corresponding change in the electrical current flowing to the meter; sheet deviations are thus easily measured. The source of radiation used in the gauge is strontium 90, which is a product of atomic energy research.

According to Eastern, the advantages of the beta gauge include the elimination of tear-outs (or samplings), increased uniformity of basis weight, and increased production with resultant savings due to the elimination of off-weight paper and faster weight changes.

Butterfield was properly registered under U. S. registry.

In the spring of 1952, the U. S. District Court at Wausau had ruled in favor of Consolidated. The government then appealed to the Chicago court. The attorney for Consolidated was T. W. Brazeau of Wisconsin Rapids.

National Container Celebrates 25th Year

A dinner marking the 25th anniversary of the founding of National Container Corp. was held recently at the Hotel Savoy Plaza in New York, N. Y. The board of directors of the corporation was host to the officers of the concern, as well as to senior executives of allied industries.

Scrolls expressing appreciation for their leadership and guidance were presented to Samuel Kipnis, the only president of National Container since its founding, and to Harry Ginsberg, chairman of the board. Mr. Kipnis and Mr. Ginsberg alone remain of the founders of the firm. The others of the original organization were Abraham Herman, William Herman, and Louis Rosenfeld.

National Container was organized in 1928 and began operations with but one box plant, in Long Island City, N. Y. Since then it has grown to an enterprise comprising 19 box plants located from coast to coast and six pulp, board and paper mills. The largest of these mills is now being completed at Valdosta, Ga., and is expected to be in operation later this year. It will increase by 500 tons per day the firm's mill production.

New Water Viscosity Standard Adopted

Effective July 1, the National Bureau of Standards, Washington, D.C., has adopted the value of 0.01002 poise for the absolute viscosity of water at 20°C. as the primary standard for the calibration of standard viscosity samples and viscometers. The date originally proposed for this change was July 1 of last year; however, at the request of the American Society for Testing Materials and the International Organization for Standardization, the adoption of the new value for water was deferred in order that ASTM and ISO members could make the change simultaneously with NBS.

The ASTM, the National Physical Laboratory in England, and the Physikalisch-Technischen Bundesanstalt in Germany indicated that they would also adopt the value of 0.01002 poise on July 1.

Up to the present time the value of 0.01005 poise for the absolute viscosity of water has been widely used as the primary reference standard. The use of the new value of 0.01002 will result in a reduction of 0.3 per cent in the measured values of viscosity and will make viscosities reported in absolute units correspondingly more accurate. Previously published data based on 0.01005 poise may be adjusted to the new standard by reducing the published values by 0.3 per cent.

Consolidated Featured in Movie on Wisconsin River

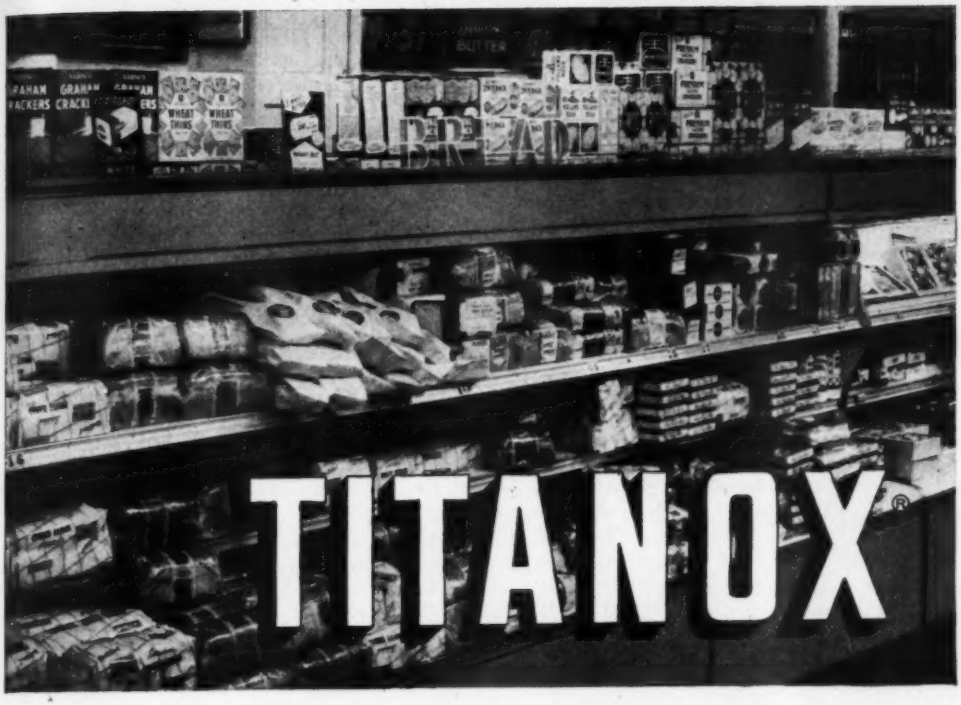
The industrial development of the Wisconsin River Valley through the harnessing of the power of the river is shown in a new sound-color motion picture that was premiered in Wisconsin Rapids June 10. The movie, "The Wisconsin River, the Hardest Working River in the Nation," features a tour through Consolidated Water Power & Paper Co.'s mill at Wisconsin Rapids and a visit to the Trees for Tomorrow Camp at Eagle River.

Forty executives of paper mills, electric power companies and chambers of commerce throughout the state attended the first showing. Paper industry officials who were present included D. C. Everest, chairman of the board of Marathon Corp.; Folke Becker, president of Rhinelander Paper Co.; Stanton W. Mead, president of Consolidated, and George W. Mead, past president of Consolidated. The film was produced by Wisconsin Power & Light Co.

Crown-Zellerbach Operations Studied by Economists

Four Colgate University economists are making an on-the-spot four-week study of the operations of Crown-Zellerbach Corp. on the Pacific Coast. The project has been designed to give members of the Colgate faculty an opportunity to apply theoretical economics to a specific firm and its problems; also, to learn how these theories may work in practice.

Included in the C-Z tour were to be the main offices at San Francisco; the Pacific Northwest headquarters at Portland; tree farms in Oregon and Wash-



MAKES SALESMEN OUT OF PAPER

In a supermarket, wrappers, labels and packages are salesmen—all competing for recognition by the shopper.

TITANOX titanium dioxide pigments contribute to the display and recognition value of all types of paper used in wrappers and packages. Whiteness, brightness, opacity, color, contrast and other effects are all obtainable with these strongest of white pigments.

Write our Technical Service Department for assistance with your paper pigmentation problems. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Atlanta; Boston 6; Chicago 3; Cleveland 15; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 9, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

1674

® TITANOX

the brightest name in pigments

TITANIUM PIGMENT CORPORATION

Subsidiary of NATIONAL LEAD COMPANY

ington, and production units at Camas, Wash., West Linn, Ore., and San Leandro, Cal. The men are studying all phases of operation, including administration, production, forest management, labor relations, and marketing problems. Officials of Colgate University chose C-Z for the project "because it is one of the largest and most versatile pulp and paper concerns in the country."

From their intimate contact with Crown-Zellerbach operations the Colgate faculty members plan to develop test material and specific case studies to make their teaching of economics more effective.

F. C. Huyck & Sons Joins Maine Foundation

J. L. Ober, vice president of Scott Paper Co. and chairman of the University of Maine Pulp and Paper Foundation, has announced that F. C. Huyck & Sons of Rensselaer, N.Y., has taken a $1,000 company membership in the foundation.

On presenting the check for membership to officials of the foundation, Grenville R. Holden, president of F. C. Huyck, stated that, "For 82 years the fortunes of the Huyck company have been tied closely to the pulp and paper industry. We consider ourselves lucky indeed to be associated with an industry composed of people of such good will, intelligence, and integrity, and we appreciate this opportunity to join our many friends in supporting the foundation's continuing development of trained operational manpower . . . we know that we are investing in our own future."

Sensenbrenner Estate Totals $4,394,363

The will of the late Frank J. Sensenbrenner, director and former president of Kimberly-Clark Corp., was inventoried in Chilton, Wis., early in June. It revealed that the Wisconsin industrialist, who died last July 22 at the age of 87, left a gross estate of $4,394,363.

A number of Wisconsin institutions, mostly Catholic, will receive more than $1,000,000 from the estate. Principal beneficiary is to be Marquette University, which will eventually receive Tamagami, the Sensenbrenner home on Lake Winnebago, and 15 per cent of the estate, which may not exceed $400,000.

The University of Wisconsin Foundation is to get 4 per cent of the net value, not to exceed $100,000. About 55 per cent of the estate will be put in trust for the Sensenbrenner children.

Industry Notes

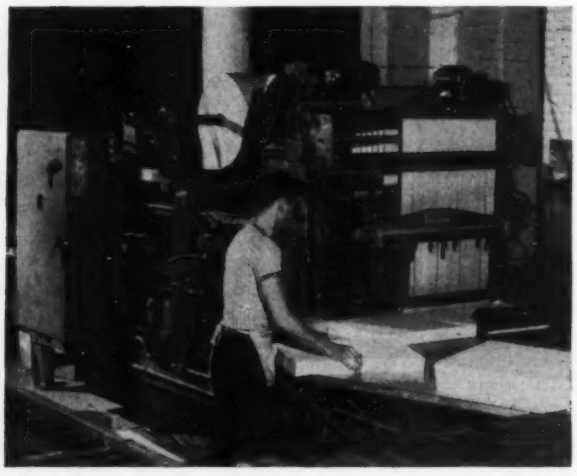
Rayonier Inc.
has announced that its pulp mill at Hoquiam, Wash., was to be placed on a curtailed production basis June 19. The schedule reduction was to extend into July. George Holt, resident manager, said that the program will reduce Rayonier's pulp production at the plant from 2,100 to 1,500 tons weekly.

Plans for Two Plants
manufacturing cellulose and paper from bagasse have been announced by the Brazilian Sugar and Alcohol Institute. One plant will be financed by a special assessment on each sack of sugar and will cost about $4,000,000.

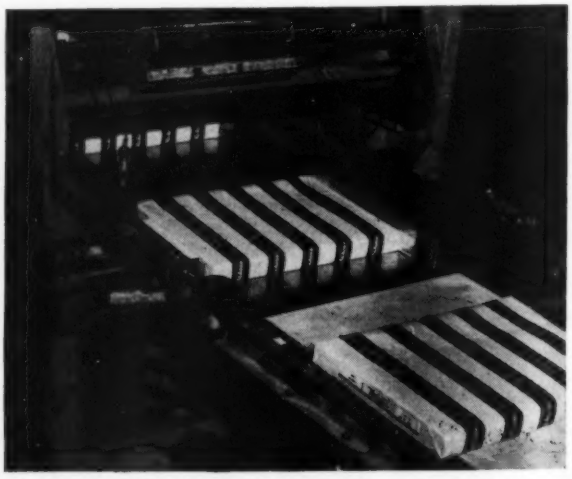
American Forest Products Industries
has established a new field office at Harrisburg, Pa., to serve Pennsylvania, New York, New Jersey, Maryland and Delaware. The area had previously been a part of the northeastern region, with headquarters in Boston.

"Log Pirates"
have been making costly raids on rafts of newly-cut timber floating down the Columbia River. Thirty-seven lumber companies have organized Columbia Basin Log Salvage Co. to trap the thieves by river patrols.

Riegel Paper Corp.
shut down all its mills and converting facilities from July 4 to July 13 to allow production personnel vacation time. The staffs of the sales and sales service departments remained on duty.



OPERATOR feeding paper into Nepco's new ream sealer and labeler



FINISHED packages leaving the machine after being labeled

Ream Wrapper and Labeler Developed at Nekoosa-Edwards

A new, fully-automatic ream wrapper and labeler machine, the first of its kind in the industry, has been developed at the Port Edwards mill of Nekoosa-Edwards Paper Co., Port Edwards, Wis. At present, one machine has been completed and is in regular operation in the finishing room, but three more are now being built by the Nekoosa Foundry.

The machine is capable of a speed of 10 packages per minute, which is in excess of any trimmer operation. It handles standard sizes in all weights of bond, mimeo, and duplicator papers. The original idea was conceived by J. K. Vanatta, Nepco's manager of purchases and manager of scheduling, who began investigating the possibilities some five years ago. He has directed the development of the unit, and later modifications of design and improvements have been effected with the aid of Nepco operating and engineering personnel.

The machine will be sold by Groswold & Johns of Chicago, but all patents are held by Nekoosa-Edwards.

TECHNIQUE IN LAYING DOWN an experimental "color" on a standard paper base stock; after the sheets are dried, various physical tests are made to measure the quality of the coating

OPERATOR AT LEFT is squeezing the water from a handsheet of paper pulp prepared in the Wyandotte paper laboratories; drying frames for the circular handsheets are seen in the foreground

NEW RESEARCH LABORATORIES recently dedicated by Wyandotte Chemicals Corp.; included in the center are meeting rooms, offices, library, extensive laboratories, and market development facilities

IN THE SYNTHESIS and purification of organic compounds many varieties of distillation columns are available at Wyandotte Chemicals' new research laboratories; racks were designed for maximum utility

Wyandotte Expands Research Facilities at Michigan Plant

Wyandotte Chemicals Corp.'s new research center at Wyandotte, Mich., went into full operation June 7. The firm is a major producer of several of industry's most essential chemicals, including chlorine, soda ash, and caustic soda, and is the world's largest manufacturer of specialized cleaners and sanitizers for industrial applications.

The new facilities permit a consolidation of Wyandotte's many research and development activities and will enable the company to materially expand not only its long-range research within the organic and inorganic chemical fields, but also special research projects assumed by the firm on behalf of the national defense program.

Described by professional men as "one of the finest research facilities in the chemical industry," the laboratories embody a new concept of industrial laboratory design and construction. This includes laboratories with movable walls and built-in services that make them as flexible as movie sets.

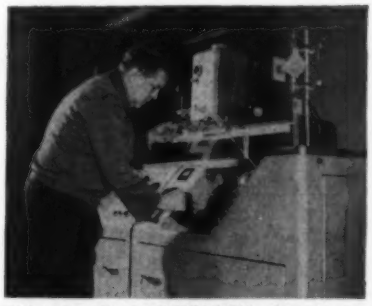
Experts at the center work on more than 200 Wyandotte products that affect the lives of everyone. Included are special areas devoted to exploration in such fields as radioactive tracers, nucleonics, electronics, organic and inorganic chemistry, sanitation and germicides, electroplating, physics, and the entire field of commercial cleaning.

At dedication ceremonies, Robert B. Semple, president of Wyandotte, declared that, "The quest for new products, new uses for old products, and the improvement of old products is a constant challenge to industry . . . We hope that as a result of the work done here at our new research center and the production from new and expanded plants and equipment, our business will keep pace with the dynamic chemical industry in the years ahead."

Variety of projects

Wyandotte's research laboratories boast a wide variety of specialized equipment, ranging from the most basic and fundamental to massive machines designed to duplicate environments under practical "use conditions" in the field. Among the many laboratory functions and facilities are analytical research, food technology, industrial research, inorganic research, laundry and textile, organic research, and nucleonics laboratories.

To the paper industry Wyandotte is a major supplier of caustic soda, chlorine, pigments, and detergents. Applica-



ANALYTICAL RESEARCH department, where more than 23,000 chemical compounds have been "finger printed" and where new products of research are identified; man is adjusting emission spectograph

BACTERIOLOGICAL LABORATORY is an example of the thoroughness with which the new research center was planned; in addition to an innoculation room are three walk-in incubators thermostatically controlled

AT DODGE celebration of 75th anniversary, plaque is presented in recognition of firm's service:

(left to right)
Joe A. Brady
Mayor E. S. Walton
J. E. Otis Jr.
Mason L. Petro
Edward C. Went
(Brady, Petro and Went are former Mishawaka mayors)

Dodge Celebrates 75th Year

Dodge Mfg. Co., manufacturer of power transmission machinery, marked the 75th anniversary of its founding June 17 at an open house at its Mishawaka, Ind., plant. More than 3,000 persons, including employees and their families, toured the factory.

Mayor E. Spencer Walton presented the Dodge firm with a commemorative plaque on behalf of the City of Mishawaka. The award, accepted for the company by President Joseph E. Otis Jr., bears the inscription: "Presented to the Dodge Manufacturing Corporation, gratefully commemorating three-quarters of a century of industrial progress and civic achievement in the City of Mishawaka, Indiana."

In the 75 years since its establishment, Dodge Mfg. has grown from one product to 6,000, from a dozen workers to more than 1,000, and from an original capitalization of $50,000 to a current net worth in excess of $5,500,000.

Wallace Dodge, founder of the firm, began his manufacturing venture in 1878 by patenting the "magic wagon jack" that was to find instant acceptance in the horse-driven transportation industry of the day. The business grew rapidly until 1881, when a disastrous fire wiped out the original plant. Rebuilt quickly, Dodge expanded its line to include the newly patented wood split pulley. Flexible drive systems followed, and the company grew to national acceptance.

Only four presidents have served since 1878. Wallace Dodge was succeeded by his nephew, Melville W. Mix, in 1894. George C. Miller became head of the organization in 1922, while in 1939 the present head, Mr. Otis, took charge. He had formerly been president of Stewart-Warner Corp.

---

tion research includes the development of new and improved products for paper coating and filling, specialties such as sodium carboxymethyl cellulose for imparting grease resistance and improved strength, and techniques for de-inking and bleaching.

Other industries served by the Michigan firm are rubber, plastics, paint, metal finishing, railroad, aircraft, laundry and textile, and food.

Food Machinery's Soda Ash Facilities in Production

Food Machinery & Chemical Corp. has announced that the soda ash refining facilities at Westvaco, Wyo., were expected to reach commercial production levels about June 15, with deliveries beginning simultaneously. The operation constitutes the first wholly new soda ash manufacturing unit since 1935. FMC's Westvaco Chemical Division will operate the plant for Intermountain Chemical Co. and will also act as exclusive sales agent.

Cameron Announces Vacation

Cameron Machine Co., Brooklyn, N.Y., will shut down on July 24 for its annual two-week vacation period. The plant will reopen August 10. During the period there will be a skeleton force on hand in both the office and the shop. Emergency repair parts orders that can be filled from stock will be handled. No shipments will be received during the vacation, and suppliers have been asked to make shipments either in advance of the closing date or after August 10.

Columbia-Southern Increases Chlorine-Caustic Soda Output

Columbia-Southern Chemical Corp. has placed in operation additional chlorine-caustic soda producing units at plants located at Natrium, W. Va., and at Corpus Christi, Texas. The new production lines will enable the firm to double production capacity at Corpus Christi and increase Natrium capacity by about 35 per cent.

B-C Exclusive Licensee for Cowles Equipment

The Black-Clawson Co., Hamilton, Ohio, has completed a licensing arrangement with Cowles Co. of Cayuga, N.Y., under which B-C will manufacture and sell four major items of Cowles stock preparation equipment. The Cowles Co. has reserved the right to continue the sale of its equipment under the manufacturing agreement with Black-Clawson.

The products covered by the agreement are the Aquapulper, a unit to slush and defiber paper stock; the Beatapulper, a combination batch pulper and refiner that slushes, defibers and refines paper stock all in one operation; the Classapulper, a new continuous pulper of virgin or waste paper stock that will extract foreign materials from the pulped stock, and the Knifemill, a refiner-type unit that will completely defiber, cut and refine slushed paper stock in either batch or continuous systems.

The four Cowles developments are immediately available and will be built by the Shartle Bros. Machine Division of Black-Clawson at Middletown. Under the licensing agreement, Shartle will sell and manufacture the Aquapulper under the name of "Hydraslusher" and the Beatapulper under the trade name of "Hydrabeater." No name changes are immediately contemplated for the Classapulper or Knifemill.

B-C opens New York office

Black-Clawson has established headquarters for export sales and domestic service in the Metropolitan New York area. The new office, located at 250 Park Ave., will function primarily in the interest of integrating world-wide representation of Black-Clawson, its American divisions (Shartle Bros. Machine and Dilts Machine Works), its British subsidiary sales and manufacturing company in London, B-C International Ltd., and other associated firms in foreign countries.

Frank T. Peterson, newly elected vice president and assistant to the president, will be in charge. He was formerly deputy managing director of B-C International in London.

Allied Notes

W. C. Hardesty Co. of Canada Ltd.
has announced that hydrogenated castor oil (Harwax G) is now available from Canadian production. Hardesty is the first Canadian firm to produce the chemical which has use as waterproof coating for papers.

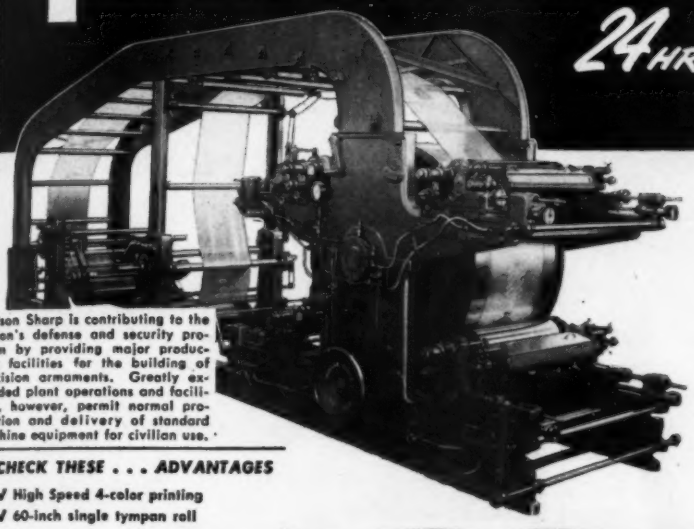
A. O. Smith Corp.'s
Welding Products Division announces the addition of three distributors: Pensacola Welding Supply Co. Inc., Pensacola, Fla.; Worland Oxygen Co., Worland, Wyo., and Guilford Welding Supply Co., Baltimore.

Dow Chemical Co.
has opened a sales office in Minneapolis to serve the northern half of Wisconsin, Minnesota, and the two Dakotas.

Moore & White Co.,
Philadelphia, has named Orton Corp. of Fitchburg, Mass., as sales representa-

FLEXOGRAPHIC PRINTING with COLOR CONTROL

24 HR. CONTINUOUS REGISTER WITHOUT ADJUSTMENT!



Hudson Sharp is contributing to the nation's defense and security program by providing major production facilities for the building of precision armaments. Greatly expanded plant operations and facilities, however, permit normal production and delivery of standard machine equipment for civilian use.

CHECK THESE . . . ADVANTAGES

- ✓ High Speed 4-color printing
- ✓ 60-inch single tympan roll
- ✓ Constant, one setting register
- ✓ Perfect tension web control
- ✓ Low range surface drying
- ✓ Continuous operating splash-proof ink fountains
- ✓ Automatic color throw-outs
- ✓ Prints 20" to 50", repeats up to 36"
- ✓ Continuous smooth drive operation
- ✓ Heavy duty arc-type frame
- ✓ Overhead lead for easy accessibility, better drying and handling.

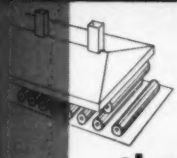
HUDSON-SHARP
MACHINE CO • GREEN BAY • WIS
Manufacturers of
Printers, Embossers, Folders, Interfolders, Waxers, Laminators, Wrapping Machines, Core Winders, Packaging Presses, Crepers and Napkins, Toilet Tissue and Paper Towel Units.

A-4 ARC TYPE press licks costly register slow-downs . . . material breakage stoppages

Manufacturers, converters and commercial printers keep production moving with this modern press. Designed especially for accurate, continuous hair-line register on polyethylene, vinyls, plastic films, foils, cellophane and thin papers — where exceptional stretch and expansion is prevalent. Construction embodies single 60" diameter impression cylinder around which is mounted one to four color stations. In operation, web locks around cylinder to provide nearly *foolproof* register. Specially designed hydraulic web control maintains constant tension unwind and rewind throughout printing and drying. Write for complete details.

NEWCOMB-DETROIT

PIONEERS IN INDUSTRIAL VENTILATION



HEAT & AIR SYSTEMS
that cut cost and increase production in
PAPER MILLS

For Bulletins and Quotations, Write
NEWCOMB-DETROIT
5763 Russell St.
Detroit 11, Mich.

ESTABLISHED 1912
• DETROIT DIVISION
• GRAND RAPIDS DIVISION
• NEWCOMB INDUSTRIES, LTD., WINDSOR DIVISION

COCHRANE CHEMICAL COMPANY

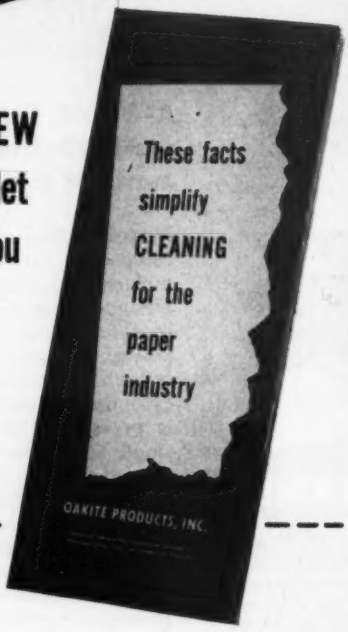
Specialists in WAXES for the paper and insulating trade

Laminating . . . Paper Coating . . .
Saturating . . . Wax Concentrates . . .
Heat Sealing Waxes . . .
Moisture Vapor-resisting Waxes . . .
Petrolatums . . . Wax Emulsions . . .
Dip-coating (conforming to Army-Navy specifications).
Special blends for paper converting.

COCHRANE CHEMICAL CO.
151 Main Street
Matawan **New Jersey**

ONE IDEA

from this NEW Oakite Booklet may save you many a cleaning dollar



Here, in 28 fact-filled pages, you'll find helpful information on job-tested cleaning methods covering a wide range of maintenance, overhaul and repair work. Here you'll find new ideas, suggestions for worthwhile savings on such jobs as:

- **restoring felt absorbency**
- **cleaning Fourdrinier wires**
- **removing slime, pitch**
- **cleaning suction press rolls**
- **descaling heat exchangers in place**
- **steam cleaning save-alls, filter screens**
- **stripping paint**

Illustrated Booklet is yours free for the asking. Send for your copy today. Oakite Products, Inc., 82 Rector Street, New York 6, New York.

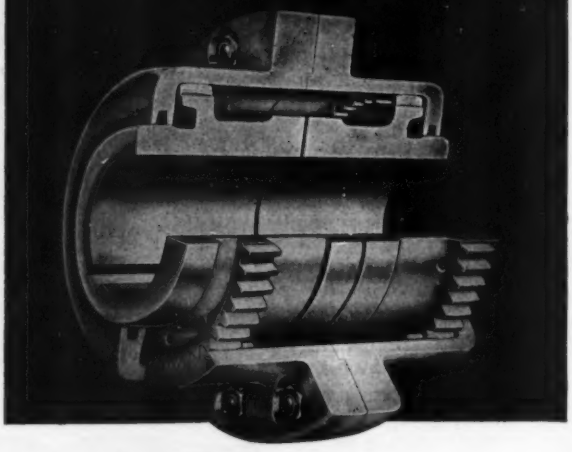
SPECIALIZED INDUSTRIAL CLEANING

OAKITE

MATERIALS • METHODS • SERVICE

Technical Service Representatives in Principal Cities of U. S. & Canada

POOLE



A COPY OF CATALOG GIVING FULL DESCRIPTION AND ENGINEERING DATA SENT UPON REQUEST.

FLEXIBLE COUPLINGS

POOLE FOUNDRY & MACHINE COMPANY WOODBERRY, BALTIMORE, MD.

EST. 1884 — CORPORATE 50th ANNIVERSARY — INC. 1903

We accept FULL Responsibility for Designing, Installing and Maintaining your corrosion-resistant Tile Tanks and Linings

Our own engineers design the job. Our own skilled crews install it. Our own service men maintain it. One contract covers the whole thing, with responsibility resting squarely on us.

We accept the responsibility; long experience and ample resources permit us to do so.

One typical result: 80% of all chemical pulp made in North America is processed at some stage in equipment built or lined by Stebbins.

SEMCO

STEBBINS

Engineering and Manufacturing Company, Watertown, N. Y.

tive for M & W equipment and machinery in Maine, New Hampshire, Vermont, Rhode Island, Massachusetts, and Connecticut.

Barco Mfg. Co.
of Barrington, Ill., has announced the appointment of the Rawdon Myers Agency, Cincinnati, as district representative for southern Ohio, southern Indiana, and Kentucky.

Builders-Providence Inc. and Omega Machine Co.
have moved their Midwestern sales office and service center, formerly located in Wilmette, Ill., to Chicago. As of July 15, the new address is B-I-F Industries, 2039 West Howard St.

Monsanto Chemical Co.
has announced that it will enter the field of manufacturing polyethylene plastics. Initial annual capacity of the new plant will be about 66,000,000 lb. and will be in production in 1955, with a 50 per cent increase in capacity projected for 1957. The site for the new plant has not been announced.

Reichhold Chemicals Inc.
has set up a manufacturing division at Ballardvale, Mass. Production will include synthetic resins and basic industrial chemicals.

Norton Co.'s
Abrasive Division, Grinding Machine Division and Refractories Division have moved their domestic sales office from 61 Broadway, New York, N.Y., to Teterboro, N. J.

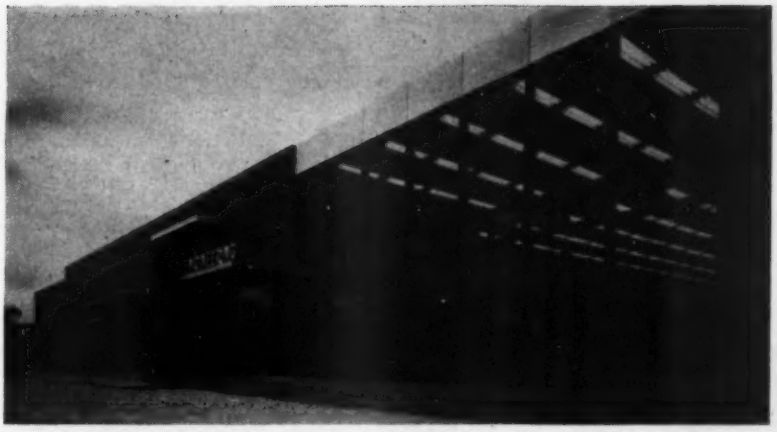
Copes-Vulcan Division
of Continental Foundry & Machine Co. has announced the appointment of Power Economy Inc. of St. Louis as sales representative.

Allied Personalities

W. S. SIMPSON has been elected vice president of the Raybestos Division of Raybestos-Manhattan Inc. *J. H. MERREL*, vice president of the western sales division at Chicago, has been awarded a 50-year service pin by R-M.

ROBERT JOHNSTON has been made technical service representative in the paper chemicals department of North American Cyanamid Ltd., Canadian subsidiary of American Cyanamid Co. Mr. Johnston, who will headquarter in Montreal, was at one time on the staff of Bathurst Power & Paper Co. Ltd.

RICHARD N. MATHEWS has been elected vice president of Kewanee-Ross of Canada Ltd. and placed in charge of the firm's new general offices in Toronto.



NEW ENGINEERING BUILDING of Edward Valves Inc. at East Chicago, Ind.; included is a large drafting room with the maximum natural north light provided by giant windows; the structure is located next to Edward Laboratories, the largest in the world devoted exclusively to research on steel valves

The recently formed company was established to provide engineering and sales service to Canadian industry on all types of shell and tube heat exchangers, coolers, surface and barometric condensers, steam jet ejectors, and high-pressure steam boilers.

J. C. KUHN has been elected vice president for sales of the Atkins Saw Division of Borg-Warner Corp. He was formerly vice president and director of sales for Morse Twist Drill & Machine Co., New Bedford, Mass.

J. C. Kuhn

J. H. Walters

J. H. WALTERS has been appointed Houston district sales manager for Rockwell Mfg. Co., Pittsburgh. He will be responsible for the coordination of all meter and valve sales in the district.

WILLIAM J. HEALY, sales manager of the turbine division, has been named to the additional post of sales manager of the blower and compressor division of De Laval Steam Turbine Co.

FRANK DAY, VINCENT LO SCALZO and *V. L. EVANS* have been assigned field sales posts for the Valve Division of Minneapolis-Honeywell Regulator Co. Mr. Day will handle industrial valve sales in the New Orleans area, Mr. Lo Scalzo in Kansas City, and Mr. Evans in Wilmington, Del.

DR. ELDEN D. HALLER, senior sales engineer with Beckman Instruments Inc., has been named eastern sales manager for the South Pasadena, Cal., firm.

JOHN D. MacNAMARA, veteran of more than 12 years' industrial and instrument sales experience in the eastern states, has been named field sales manager for Beckman Instruments Inc., South Pasadena, Cal. He was formerly with the Industrial Division of Minneapolis-Honeywell Regulator Co.

J. D. MacNamara

Norman Amend

NORMAN AMEND has been named assistant manager for organic chemicals of the Michigan Alkali Division of Wyandotte Chemicals Corp. He succeeds R. K. Rigger, recently named manager of the Synthetic Detergents Department.

WILLIAM J. CAMPBELL JR. has been elected vice president in charge of sales for Lockport Felt Co. He succeeds the late Bertram A. Audley. Mr. Campbell, who has been with the firm since 1934, was formerly sales manager.

HOWARD M. PALMER, general sales manager for Lewis-Shepard Products Inc., has been elected 1953 president of the Materials Handling Institute. L-S has announced that *FRANCIS E. HONSA* has been made exclusive repre-

H. M. Palmer

F. E. Honsa

W. C. Beals

R. B. Hill

sentative in the southern Connecticut area.

ALBERT G. LINDSAY, at one time foreign sales manager of Eastern Corp., has been named manager of the Export and International divisions of Rockwell Mfg. Co.

J. A. ROBINSON has been made field sales manager for the Industrial Division of Minneapolis-Honeywell Regulator Co. He succeeds *O. B. WILSON*, who has been made sales manager of industrial instruments.

Fairbanks, Morse & Co. has announced the election of *J. A. CUNEO*, general sales manager, to the board of directors. *ORREN S. LESLIE* has been elected vice president of manufacturing.

J. W. Mueller

D. P. Murrill

Chain Belt Co., Milwaukee, has announced the appointment of four new sales engineers. *WILLIAM C. BEALS* has been assigned to the Buffalo office; *ROBERT B. HILL* to the Portland, Ore., office; *JAMES W. MUELLER* to the Chicago office, and *DABNEY P. MURRILL* to the Atlanta office.

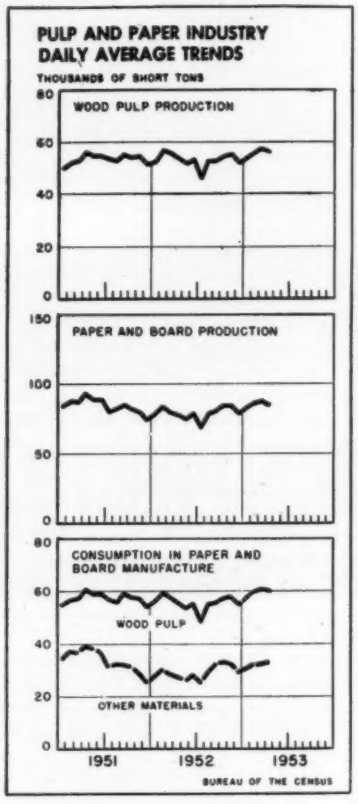
U. S. Paper and Paperboard Production

	Apr. 1953 (tons)	Mar. 1953 (tons)	Apr. 1952 (tons)	Total 1952* (1,000	Total 1947 tons)
Paper and Board, total	2,262,869	2,281,448	2,014,008	24,413	21,102
Paper, total	967,034	971,566	940,357	10,896	10,693
Newsprint	85,760	88,965	90,141	1,106	833
Groundwood paper (uncoated)	67,381	64,624	74,913	809	821
Printing and converting (coated)	101,504	100,956	93,823	1,096	
Book paper (uncoated)	136,820	141,514	126,878	1,482	2,208
Fine paper (writing, cover and text, bristols, thin paper and other)	112,105	108,326	116,076	1,295	1,172
Coarse paper (unbleached, kraft, glassine, greaseproof, vegetable parchment and other)	287,331	293,058	277,891	3,235	2,903
Special industrial paper	35,046	36,318	35,477	396	289
Sanitary tissue stock	109,657	107,468	97,826	1,148	894
Tissue paper	19,921	19,267	17,970	209	195
Absorbent paper	11,509	11,070	9,362	118	100
Paperboard, total	1,039,545	1,061,756	855,179	10,776	9,187
Containerboard, total	565,800	574,163	448,098	5,770	4,943
Liners	382,413	385,009	301,847	3,905	3,293
Corrugating material	154,232	161,718	124,087	1,583	1,370
Container chipboard	29,155	27,436	22,164	282	280
Bending board (folding boxboard)	295,573	310,328	255,066	2,194	2,249
Non-bending board (set-up boxboard)	76,647	75,951	62,000	687	595
Special Paperboard stock	88,983	88,212	83,922	2,056	1,307
Cardboard	12,542	13,102	6,093	69	92
Wet machine board	13,924	14,123	11,578	137	150
Construction paper and board, total	242,366	234,003	206,894	2,603	2,349
Construction paper	117,206	105,583	110,321	1,298	1,277
Hardboard and insulating board	125,160	128,420	96,573	1,305	1,072

(*) Preliminary report. *Source: U. S. Department of Commerce.*

April Pulp, Paper and Board Production

Paper and board production during April amounted to 2,262,869 tons, according to a report by the Bureau of the Census. This is about 12 per cent more than the 2,014,008 tons of April 1952.



The output of paperboard grades during the month, amounting to 1,039,545 tons, reflected an increase of 22 per cent over the production of the previous April. Paper production was 976,034 tons, registering a slight increase from the 940,357 of the year before.

Pulpwood receipts at the pulp mills during April amounted to 1,987,662 cords, with consumption at 2,372,336 cords. Month-end inventories decreased about 6 per cent to 5,601,065 cords.

Wood pulp production during April amounted to 1,477,893 tons, as compared to 1,390,601 in April 1952.

Wood pulp inventories at the end of April at the paper and board mills were 528,873 tons, as compared with the 540,506 tons reported at the end of March. Month-end stocks at the pulp mills amounted to 158,804 tons, showing practically no change.

DIGESTER
BLOW-OFF FITTING

MISCO C . . . . . 29% Cr 9% Ni
8" x 16" x 4" x 12" x 8" x 8"
CAST WT. 1035# FINISHED WT. 950#

MISCO
STAINLESS STEEL
CASTINGS

FOR ALL EQUIPMENT EXPOSED TO CORROSION BY SULPHITE ACIDS OR OTHER CORROSIVE AGENTS

Michigan Steel Casting Co.
1999 GUOIN STREET · DETROIT 7, MICHIGAN
MISCO
ONE OF THE WORLD'S PIONEER PRODUCERS OF HEAT AND CORROSION RESISTING ALLOYS

PHOTOVOLT
Photoelectric REFLECTION METER

for accurate measurement of

Brightness and Opacity

of pulp and paper in terms of TAPPI specifications. Also for

Gloss and Color

tests on paper, cardboard and other paper products.

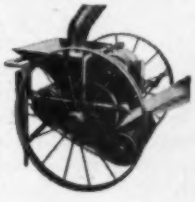
Portable, reliable, rugged, simple to operate

PHOTOVOLT CORP.
95 MADISON AVE. NEW YORK 16, N. Y.
Also: Colorimeters, pH Meters

Load Chips
FASTER
with an **S-A**

BOX CAR LOADER

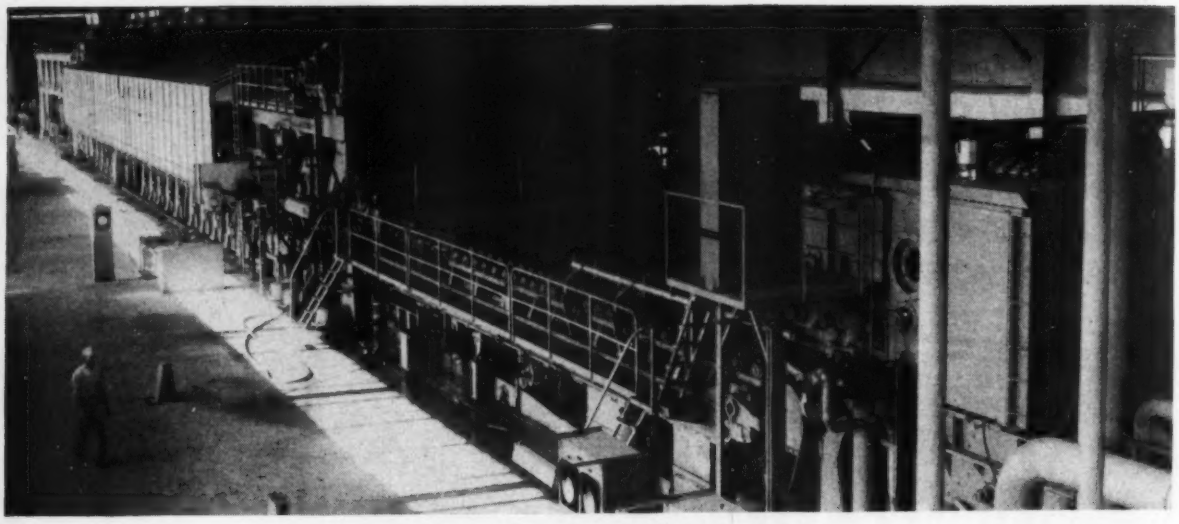
One man, with an S-A Box Car Loader, can make quick work of loading and trimming a box car. The loader operates without attention after it is placed in the car, and flow of material is started. This handy machine automatically loads and trims in a fraction of the time required by hand methods. Exposure of operator to dust is reduced to a minimum. Save time and manpower with this standard S-A portable loader . . . Handles loose granular material up to 2-inch lump size. Mail coupon for bulletin 948.



MAIL COUPON FOR FULL DATA

STEPHENS-ADAMSON MFG. CO.
Standard Products Division
59 RIDGEWAY AVE., AURORA, ILL.
Please send me Bulletin 948 on S-A Box Car Loaders.

Name.....
Company.....
Address.....
City.....Zone...State.....



New Beloit paper machine in operation at Halifax Paper Co.

New 246-inch paper machine....

Halifax Paper's latest modernization project

DESIGNED TO BRING the company's papermaking capacity in better balance with its sulfate pulp production capacity at Roanoke Rapids, N. C., Halifax Paper Co.'s new 246-inch Beloit paper machine went into operation in January, 1953. The total cost of the expansion project—which in addition to the installation of the paper machine included construction of a 540 by 76 ft. machine building, a high-density pulp storage tower, and a 6,000,000 gallon-per-day water treatment plant—amounted to $5,800,000.

More than $9,000,000 has been spent by the company during the last five-year period on an impressive expansion program at Roanoke Rapids. A second Kamyr was acquired, a second paper machine moved from the Richmond mill, new washing and screening equipment acquired, and a 200-ton Combustion Engineering black liquor recovery unit and Koppers electronic precipitator for the recovery of chemicals from smoke stack gases put into operation.

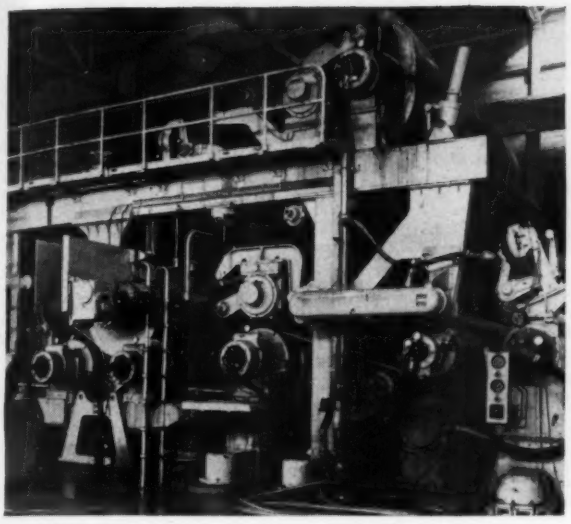
The company's daily production of sulfate pulp at the Roanoke Rapids mill is 310 tons. With the installation of the new machines, the mill's daily paper-making capacity has been raised from 75 tons to the present 345 tons. The mill produces kraft wrapping and bag paper, multi-wall sack paper, and kraft converting grades including asphalting and wax paper. Excess pulp is shipped to operation facilities at Richmond, Va.

The construction and engineering contract was given to Rust Engineering Co. of Pittsburgh, Pa., and Birmingham, Ala. On the company's side, the general expansion program and installations of machines and equipment was under the direct supervision of K. F. Adams, vice president and resident manager, and C. L. Wills, plant engineer.

Other members of the managerial and technical staff are: H. W. Ellerson, general superintendent; M. L. Boinest, paper mill superintendent; K. D. Running, pulp mill superintendent; A. C. Culbreth, power plant superintendent; R. S. Bell, assistant paper mill superintendent; John Priest, chief chemist; F. E. Kidd, woodyard superintendent; T. G. Harris, manager of wood department; B. A. Faison, personnel manager; O. W. Hegamyer, maintenance engineer; S. A. Durham, purchasing agent, and W. W. Wicks, chief forester.

In line with modern trends, the new installations feature the latest improvements in performance and equipment design, such as (1) 2,500 fpm machine speed; (2) 246-inch wire width, which makes this machine one of the widest operating in the southern states (a machine more than 270 in. wide will shortly be put into operation by Continental Can at Hopewell, Va.; (3) pressure-type headbox; (4) automatic vacuum pick-up and transfer to a cloverleaf-type press; (5) the new Beloit differential gear drive, said to be the fourth complete installation of this type in the USA; (6) more than usual emphasis on instrumentation; (7) a 75-ton high-density stock storage tank; (8) a modern 6,000,000 gallon-per-day water treatment plant.

The Halifax paper mill at Roanoke Rapids has always held its place in the vanguard of technical and process development. It was the first sulfate mill in the USA; it was the first mill to pulp southern pine by the new sulfate process and the first to make kraft paper from southern pine pulp; it was also the first to use tumbling type digesters.



Cloverleaf dual press on press section

Jamar-Olmen hood

Stock preparation and handling

A 75-ton concrete high-density stock storage tank is located at the end of the washer and screen building. Slush pulp is put through a 6 by 16 ft. Oliver filter-saveall, which also filters all excess white water.

From the saveall stock goes to a 30-ton concrete storage chest at the end of the new machine building. This building also houses a 10-ton hydrated stock chest, a 10-ton broke chest, and a white water tank below the filter-saveall.

Raw stock is passed through four No. 6 Emerson jordans, each of which is operated by a 400 hp and 450 rpm synchronous motor. The stock then goes through the hydrated stock chest and through two No. 6 Emerson finishing jordans. All jordans are piped in such a way that they can be operated either in series or in parallel. From the finishing jordans the stock goes to the stuff box equipped with flow-control valves to the fan pump suction. The 600 rpm fan pump, made by Worthington, is rated 25,000 gpm at 45-ft. head. It is driven by a 350 hp synchronous motor. All stock and water pumps are made by Goulds Pumps Inc.

K. F. Adams
V. P. and Res. Mgr.

C. L. Wills
Plant Engineer

H. W. Ellerson Jr.
General Supt.

M. L. Boinest
Paper Mill Supt.

K. D. Running
Pulp Mill Supt.

A. C. Culbreth
Power Plant Supt.

R. S. Bell
Asst. Paper Supt.

John Priest
Chief Chemist

F. E. Kidd
Woodyard Supt.

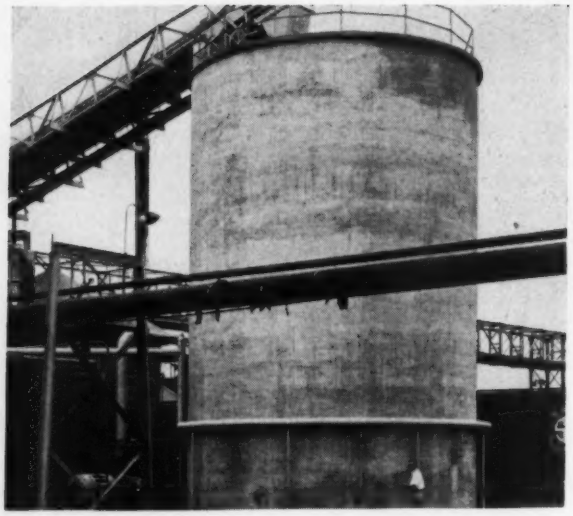
T. G. Harris
Wood Dept.
Manager

B. A. Faison
Personnel Manager

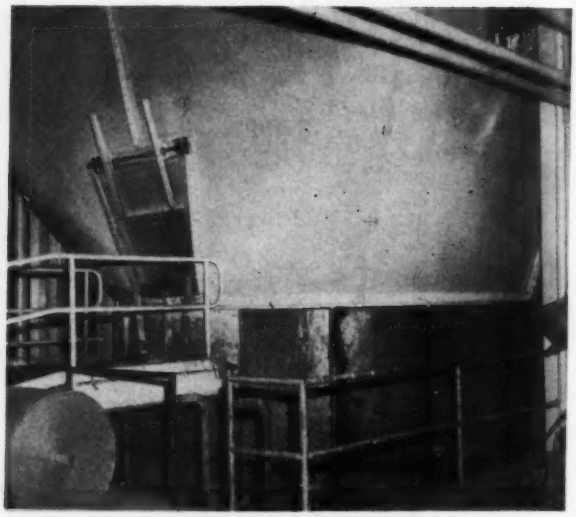
O. W. Hegamyer
Maintenance
Engineer

S. A. Durham
Purchasing Agent

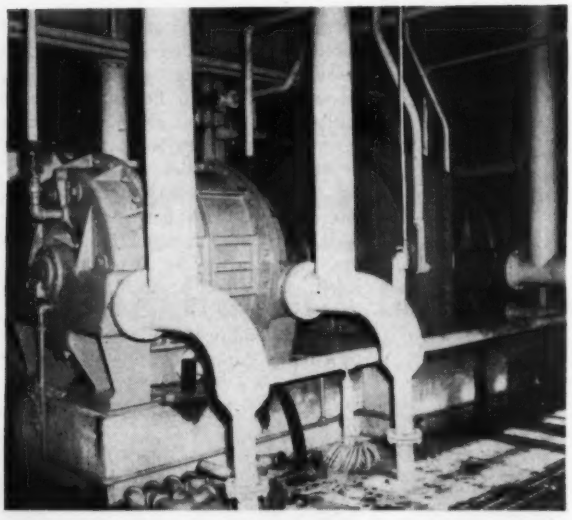
W. W. Wicks
Chief Forester



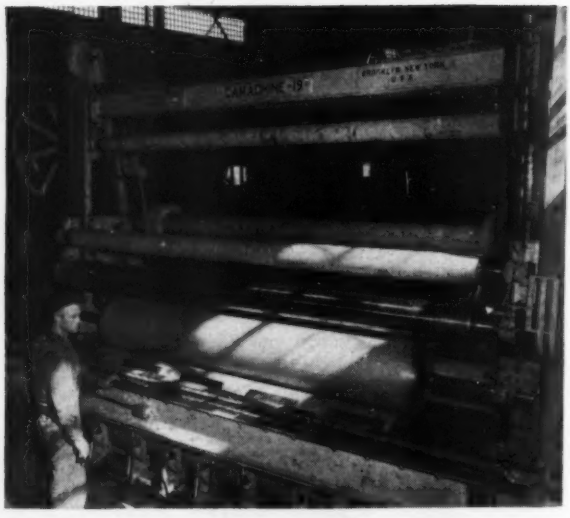
New high-density pulp storage tank



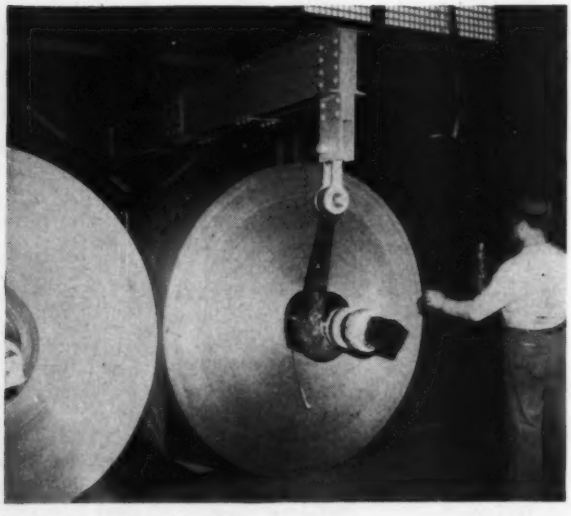
18-foot Shartle Hydrapulper



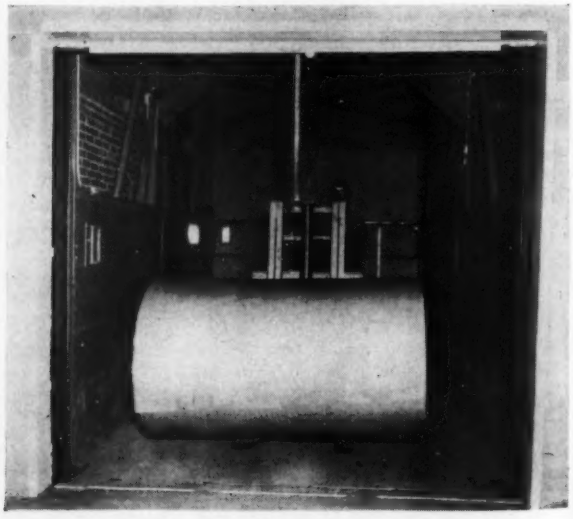
Two Nash vacuum pumps at Halifax



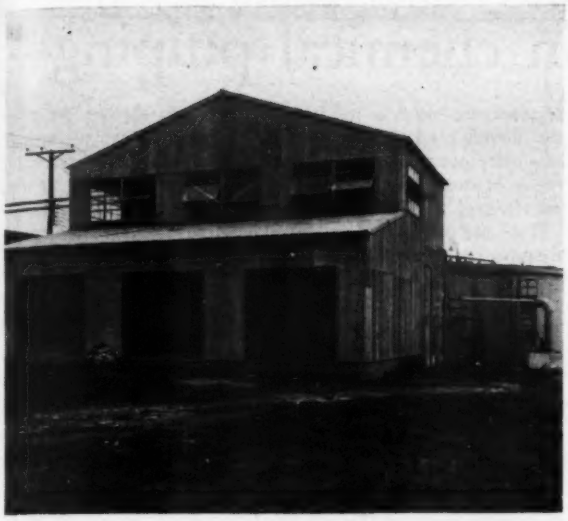
Cameron 144-inch rewinder



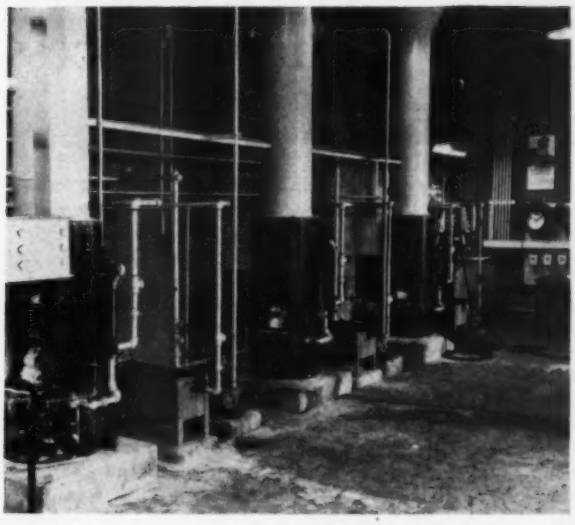
Reel of paper just off machine



Modern elevator facilitates roll-handling



Filter and chemical storage building



Chemical feeding equipment in new water plant

The wire-pit is shallow and contains baffles to lengthen the travel of water, thereby insuring maximum air removal from the white water before it enters the fan pump suction well. Excess water passes over the wire to the large couch pit from which it, together with broke, is pumped continuously either to the broke chest or filter-saveall, according to requirements.

An 18-ft. diameter Shartle Hydrapulper equipped with a 78-in. diameter rotor and a 200 hp motor is located directly under the calender stack and receives broke from the last dryer, calender, or reel.

Paper machine

The Beloit paper machine, designed for a speed of 2,500 fpm, has a wire 246 in. wide and 126 ft. long. The breast roll is 32 in., the suction couch roll 42 in., and the wire turning roll 32 in. in diameter.

As already stated, the machine features a pressure headbox and an automatic vacuum pick-up and transfer from wire to a cloverleaf-type press.

The dryer section contains 32 dryer rolls and four felt dryers—all are 60 in. diameter and designed for operation under 125 psi steam pressure.

Between the second and third dryer section there is a breaker stack with 32-in. diameter rubber-covered rolls.

The open-sided Beloit calender stack with Farreloy rolls has a 34-in. diameter bottom roll and nine 16-in. intermediate rolls. A heavy-duty reel with 36-in. diameter constant speed drum can handle paper reels up to 84-in. diameter.

The Beloit unwinding stand features a water-cooled brake. The double-drum winder is designed for maximum speed of 4,500 fpm. The Beloit winder has 12 individually driven shear-type back slitters and 15 rider slitters. An automatic Tru-Tension regulator on the winder works through the unwind stand air brake to provide constant sheet tension during acceleration, steady operation speed, and deceleration.

The vacuum pumps—seven H-11A, three K-9, and one K-6—are made by Nash. A 675-cfm air compressor is made by Chicago United Tool Co. and a 58-cfm non-lubricated air compressor by Ingersoll-Rand Co.

Paper machine drive

The paper machine is driven by a 1,500 hp Westinghouse turbine supplied by steam from the boiler at a pressure of 425 psi and 560°F. Steam is exhausted from the turbine at 140 psi for the operation of the dryers and for the heating and ventilating systems. The line shaft, in addition to driving the new Beloit differential drive units, operates two dc generators which provide current for the General Electric motors on the helper drive units at the fourdrinier and press sections.

The paper machine hood and exhaust system, roof supply air system, bottom felt and "hi-jet" system, calender cooling, control room ventilation, trim-conveying system, and building heating system are supplied by Jamar-Olmen.

The entire machine room is spanned by a 3-ton Northern Engineering Works crane, and a 20-ton Shepard Niles reel crane operates between the reel and the winder.

The finishing end of the paper machine room houses a Hamblet sheet cutter and a Cameron rewinder, both trimming to 144 in. The machine scale and shipping scale are made by Toledo Scale Co.

Power generating facilities

A rebuilt Combustion Engineering boiler, equipped with Iron Fireman spreader stoker, has a steam generating capacity of 65,000 pounds at 450 psi and 560°F. The new boiler is installed outdoors adjacent to the old boiler. It has a separate coal silo, track hopper and coal elevator, ash conveyor, feed pumps, blow-down, and chemical feeds.

Electric power is purchased from Virginia Electric Power Co. and fed through two R. E. Uptegraff Mfg. Co. transformers rated (a) 5,000 KVA and 13,200 to 2,400 volts and (b) 2,000 KVA and 13,200 to 480 volts.

All motors, controls, and switch gear are supplied by General Electric Co.

Water treating plant

This model plant, designed and constructed by Rust Engineering, with Sheppard T. Powell acting as consulting engineer, went into operation in April 1953. Water enters the plant by way of a canal which connects with the river on the other side of the river dam. Prior to entering the settling and filtering system the water passes through a Chain Belt traveling screen. The Graver Water Conditioning Co. settling and filtering system consists of a 68-ft. diameter by 17-ft. high Reactivator flocculating tank, chemical feed equipment and automatic feed and desludge control handling 4,200 gpm, and three 8-ft. diameter by 14-ft. straight side pressure filters with rate-of-flow control and backwash equipment rated 400 gpm. The water pumps are made by Goulds.

All water used for papermaking and pulp washing is clarified in the flocculator. For boiler makeup, 400 gpm of the clarified water is further purified by putting it through pressure filters.

The Va-Purge process in chemical pulping—a symposium

ONE OF THE MAJOR ADVANCES in woodpulping methods in this century was disclosed in a symposium at the summer meeting of the Technical Section of the Canadian Pulp and Paper Association at Saranac Lake, N. Y., June 4-6.

A basic requirement in efficient chemical pulping of wood, according to Otto Maass, is the uniform and thorough penetration of cooking liquor into the wood. The term Va-Purge, applied to a procedure developed under the direction of Dr. Maass at the Pulp and Paper Research Institute of Canada, insures such optimum penetration. The new process is credited with further general benefits such as: (1) improved pulp quality; (2) increased pulp yields; (3) reduction in cooking time; (4) lower consumption of steam and chemicals; (5) ability to cook mixtures of wood species with little regard to variations in moisture content.

It has long been known that dry wood contains from 50 to 75 per cent air space and that this entrained air is one of the greatest obstacles resisting penetration of the cooking liquor. In the early stages leading to the development of the Va-Purge method it was experimentally shown that pre-evacuation of wood chips does indeed result in a more rapid penetration of the cooking liquor.

Since the evacuation of industrial-size digesters is impractical, the underlying thought of subsequent investigations was that the same effect could be obtained by replacing the air in the wood with some soluble or condensable gas or vapor prior to liquid impregnation. In the Institute's initial experiment sulfur dioxide was selected for this purpose and, by subjecting chips to pressures in an atmosphere of sulfur dioxide, this gas was forced into the innermost interstices of the wood. On releasing the pressure, the homogeneous mixture of air and sulfur dioxide expands and escapes from the wood structure. Repeating this procedure several times, most of the air in the wood can be replaced by soluble sulfur dioxide, which greatly accelerates the mass-penetration of the cooking liquor into the wood.

In recent experiments conducted since 1947, steam has been succesfully used in removing air from the wood structure. Steam has two obvious advantages over sulfur dioxide: (1) it is applicable to any cooking liquor, including alkaline liquors, and (2) when the air-filled chips are subjected to steam pressure prior to impregnation, the temperature of the chips is raised and, when steam pressure subsequently is released, the effect is not only analogous to that of the sulfur dioxide pressure treatment, but some of the water—either originally present in the wood or "sorbed" by the wood as a result of the steam treatment—will vaporize and help in the air removal.

The use of steam in the Va-Purge impregnation pre-treatment is more fully described in J. H. Ross' paper, which follows this introduction, while John S. Hart and R. K. Strapp describe in considerable detail the adaptation of Va-Purge to chemical pulping with the use of conventional equipment.

The Va-Purge process has been used successfully on an industrial scale in straw pulping for corrugated board manufacturing at the Trenton Division of Hinde & Dauch Paper Co. of Canada Ltd., as described in a report by W. H. Palm and Henry J. Ostrowski in this issue. With ever increasing interest in continuous pulping methods, the symposium is concluded with a paper on the applicability of Va-Purge to continuous pulping by R. K. Strapp.

The Va-Purge process has been used successfully in sulfite pulping trials at Pacific News Ltd., Ocean Falls, B.C., and also with single mill digesters in (a) soda pulping by Champion-International Co., Lawrence, Mass., and (b) kraft pulping by KVP Co. Ltd., Espanola, Ont.

This process also permits the cooking of impregnated chips in the vapor phase, i.e., with direct steam in the absence of excess liquor. This technique has long been known in the laboratory, but it has never before been thought practical on a mill scale. Within the past year vapor-phase cooks have been carried out in mill digesters in amazingly short actual cooking time by Bathurst Power & Paper Co. Ltd., Bathurst, N.B., and at the River Bend mill by Price Brothers & Co. Ltd., River Bend, Que.

U. S. patent number 2,640,774 has been issued on Va-Purge under date of June 2, 1953, and patents on the process are pending in Canada and some 20 foreign countries. Co-inventors of the Va-Purge process are Otto Maass, James H. Ross, John S. Hart, and Richard K. Strapp, all of the Pulp and Paper Research Institute of Canada.

Within the past few months, Dr. Ross has discovered a new impregnation pre-treatment which is different from Va-Purge. This new technique (known as Va-Press) has not yet been tried with mill equipment, but patents on it are pending in Canada, the United States, and several foreign countries. The details concerning the new technique remain temporarily confidential.

The Va-Purge impregnation pre-treatment: one solution to the penetration problem

JAMES H. ROSS*
Pulp and Paper Research Institute of Canada

THE VA-PURGE PROCESS, which derives its name from its use of steam to purge or remove non-condensable gases (that is, air) from wood or other vegetable tissue, is primarily a pre-treatment process. That there are unexpected benefits from this pre-treatment other than the mere removal of air is apparent from the fact that a most efficient diffusion of chemical into the treated tissue takes place when the steam-purged material is submerged in cooking liquor. Moreover, the steam ejected from the purge, when condensed, is found to contain a number of substances which could and may hinder normal penetration of wood of certain species, notably jackpine heartwood.

Abridged from a paper presented at the 1953 summer meeting of the Technical Section of the Canadian Pulp and Paper Association, held at Saranac Lake, N. Y., June 4-6.

*Mr. Ross is a consultant on the staff of the Pulp and Paper Research Institute of Canada.

The Va-Purge impregnation pre-treatment as a part of the pulping process is outlined in Fig. 1.

Although in the following description of the process we make reference only to wood chips, any other ligno-cellulosic, fibrous raw material is implied.

The purging cycle

Purging is accomplished by the use of steam. The purging cycle is carried out in a pressure vessel into which the chips have already been introduced. The purge

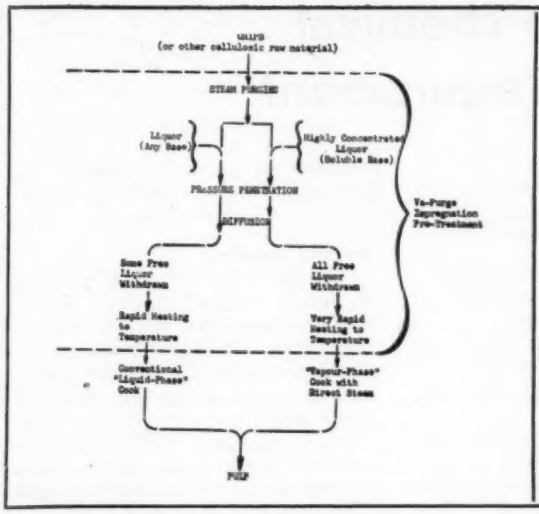


Fig. 1—Va-Purge impregnation pre-treatment and subsequent cooking techniques

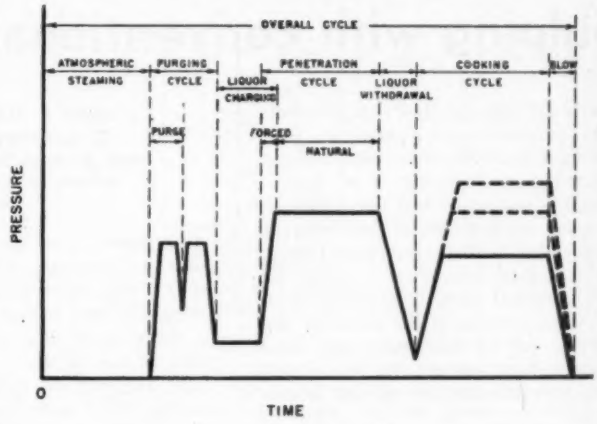


Fig. 2—Diagrammatic presentation of continuity of the process with the subsequent cooking cycle

consists of a rapid build-up of pressure to a pre-determined level through the introduction of steam into the pressure vessel, followed by a rapid release of pressure to a pre-determined lower level. The purging cycle may consist of any number of separate purges, each one removing a fraction of the air inside the vessel, including that within the chips, which fraction is determined chiefly by the magnitude of the rise and fall of the pressure. Although it is quite unnecessary to the successful operation of the Va-Purge process, it is possible and desirable both on theoretical grounds and practically to pre-steam the chips at atmospheric pressure, as during the filling of a batch digester, prior to the purging operation. This serves to remove the very large amount of air which fills the void space between the chips and also heats the charge to the temperature of steam at atmospheric pressure.

Liquor charging

When the purging cycle has been completed, liquor of a desired composition is run into the digester without permitting the re-introduction of air. It may be necessary to carry out this step under pressure if the final pressure of the purging cycle be superatmospheric. It may also be advisable and more practical to force this liquor through the charge from the lower part of the vessel.

The penetration cycle

When the digester has been filled with liquor to capacity, or at least to submerge the total chip charge, it is brought to some pre-determined pressure and maintained at that pressure, adding further liquor as necessary to keep a liquid level above the chips. This constitutes the forced penetration phase of the penetration cycle. It is of relatively short duration.

For a more efficient distribution of chemical throughout the wood substance, the peneration cycle is completed by maintaining the charge in contact with liquor, which causes a diffusion of chemical from the liquor into the chips. This is a phase of natural penetration which tends to establish an equilibrium concentration of chemical in all of the liquid within the vessel.

Since natural penetration is a diffusion process, its rate will be affected by temperature, and such phenomena as adsorption will have their impact on the final equilibrium. At temperatures above and near 80°C considerable natural penetration is complete in about 10 minutes, although an appreciable further amount will take place when the interval is extended from 10 to 40 minutes. The length of the natural penetration step is a matter of expediency and of the efficiency desired.

The steps outlined above constitute the essence of the process known as Va-Purge. Fig. 2 shows diagrammatically the continuity of the process with the subsequent cooking cycle.

When the purging and penetration cycles have been completed, the wood charge is ready for the cooking cycle. Here the efficacy of the Va-Purge pretreatment may be tested in a number of ways. It is known that in calcium bisulfite digestions it is not possible to bring a charge of liquor and chips to normal maximum cooking temperature rapidly without the occurrence of "burning." This may be accomplished, however, without such "burning" if the chips have been thoroughly penetrated, as they are found to be with the Va-Purge pretreatment. Another and more positive criterion of complete penetration is the ability to use successfully the so-called "vapor-phase technique." Under this procedure, the purged wood is penetrated with a liquor of sufficient strength of chemical so that through natural and forced penetration, the wood will have taken up during the impregnation cycle sufficient chemical to be completely pulped at an appropriate temperature. The liquor external to the chips may then be withdrawn and pulping carried out by surrounding the impregnated chips with an atmosphere of steam at the proper pressure. The relatively short exposure to the cooking liquor during the impregnation and the extreme uniformity of the pulps made by means of this technique are sufficient evidence that the pre-treatment has been highly efficient.

It is obvious from the results with vapor-phase cooking that the ratio of liquor to chips may be any that is desired: from that actually in and adhering to them when external liquor is withdrawn as fully as possible, to any greater ratio desired. In other words, once full penetration has been accomplished with Va-Purge, the subsequent liquor-to-wood ratio may be varied from that which obtains in vapor-phase technique to that which is common in conventional liquid-phase practice. The chemical charge left in the digester and the strength of the liquor in and around the chips govern the final yield and quality of the pulp for a given cooking cycle.

Adaptation of Va-Purge to chemical pulping with conventional equipment

JOHN S. HART*
R. K. STRAPP*
Pulp and Paper Research
Institute of Canada

SOON AFTER the Va-Purge pre-treatment process was discovered in 1948 and made known to the industry through a licensing arrangement, a number of Canadian companies and one American company made efforts to determine its applicability to their operations. During the five years that have elapsed, the authors of this paper have worked with the staffs of mills in the planning and carrying out of mill trials and, more recently, have advised on the conversions of whole mills to the use of Va-Purge.

During the past three years the interest in the Va-Purge process has been increasing. The Institute has learned a good deal more about it from laboratory and pilot plant scale (i.e. 2 cu. ft.) equipment and has been able to keep the licensee company personnel better informed through progress reports and newsletters regarding the process and its potential benefits.

It should also be mentioned that a major group research project at the Institute for studies in high-yield sulfite pulping has involved the use of Va-Purge and vapor-phase techniques. This program is supported by 19 companies, representing about 71 per cent of the total sulfite production of Canada.

With Va-Purge, as with many other new developments, there probably is no mill so designed as to take maximum advantage of the opportunities offered by the process. Each mill is a separate case. One has extra digester capacity, so that a shorter time cycle would not be too meaningful. Another is short on digesters but has inadequate steam plant, or insufficient pulp handling capacity, etc. Very few mills have lines and pumps intended for the very rapid introduction and withdrawal of steam and liquor which is essential to the best results in using this impregnation method and the improved cooking practices it makes possible. Some digesters have too low a strainer capacity, or no strainers at all. Consequently, the application of this new method with existing equipment must generally be a compromise in which the advantages to be gained are balanced against the costs of making the alterations to adapt the total mill set-up.

The steps in the Va-Purge process are briefly as follows:

(1) Steaming of the chip-filled digester at atmospheric pressure.

(2) Continued steaming with the relief valve closed, which results in raising the pressure to a point usually between 10 and 50 psi.

(3) Stopping the flow of steam and relieving the digester rapidly to 0 psi, or at least to a value half that of the pressure developed in step (2). Steps (2) and (3) constitute a single purge. They may be repeated a second or third time, if required for a particular type of raw material.

(4) Pumping of the cooking liquor, followed by an interval of pressure impregnation and diffusion. Thereafter, the excess liquor, containing chemicals not really required for the pulping reaction, can be withdrawn to some extent or removed altogether.

The application of the above technique to a small, laboratory-type digester is relatively simple, and, apart from any quality improvements which may result from the use of the Va-Purge process, there is a spectacular saving in overall time in laboratory cooks.

In translating to the mill scale with most conventional equipment in present day mills, however, much of this time saving may be lost through inability to carry out the several successive operations with anything approaching the speed of the laboratory scale because of the limitations imposed by existing pipes, pumps, fittings and, perhaps, steam supply. Yet, this does not need to be the case since, with proper initial design or with adequate alterations, both rapid purging and steaming are possible. At many mills substantial alterations would be needed to provide the optimum conditions for taking advantage of Va-Purge. They might not, indeed, be very expensive in time and money. But operators and managements are understandably reluctant to make such changes before the benefits have been proved. And that cannot be done without the proper equipment arrangements. Consequently, in the majority of mill trials to date it has not been possible to make these changes. Therefore, the trials did not always achieve the full benefits attainable through the use of the Va-Purge impregnation pre-treatment process.

Before dealing with the adaptation of Va-Purge to the alkaline or acid pulping processes in particular, some general practices common in its adaptation to both may be considered.

General practices

The first of these has to do with Step 1, that of steaming the filled digester. This operation may well be combined with filling the digester, since it has the double advantage of aiding in the packing and in saving time. With adequate steam flow, and with proper distribution of steam such as can be attained by using nozzles, the removal of air surrounding the material (and probably also some of that within it) should be essentially completed by the time the digester is full. Thus, the removal of a good deal of the air in the digester need not add to the length of the cycle.

The same two factors—adequate steam flow and proper steam distribution—will influence the efficiency of Step 2, in which the pressure is raised to a level between approximately 10 and 50 psi. In the laboratory the upper pressure can be attained in about 1 minute, whereas 20 minutes would be exceptionally fast time for conventional equipments that have not been modified. Proper initial design or modifications can cut this time in half.

The rapid relief called for in Step 3 cannot usually be achieved in practice without, in most cases, a major alteration to conventional design. The ordinary relief lines are quite inadequate for relieving the steam pressure rapidly; but, where liquor circulating systems have been installed, they can be tapped and used for the relief. Even with the large strainer area which is thus made available, the relief may be so relatively slow that additional strainer capacity might be added with advantage in many instances.

In Step 4 the pumping of the digester and the pressure impregnation offer no great difficulties. The latter may be done by the filling pump, provided it has the correct characteristics. If not, a steam pressure can be applied to the top of the liquor by means of the blow-back line connected to the top strainer. It has been found that a pressure of at least 20 psi is required to assure rapid penetration. Many filling pumps now installed will maintain pressure in excess of this. There is experimental evidence that forced penetration is actually completed in 2 to 3 minutes. For that purpose a minimum pressure impregnation period of 10 minutes is standard practice in the Institute's pilot plant. This is one part of the process in which the smaller

---

Abridged from a paper presented at the 1953 summer meeting of the Technical Section of the Canadian Pulp and Paper Association, held at Saranac Lake, N. Y. June 4-6.

*Mr. Hart is head and Mr. Strapp assistant head of the Chemical Pulping Division of the Pulp and Paper Research Institute of Canada.

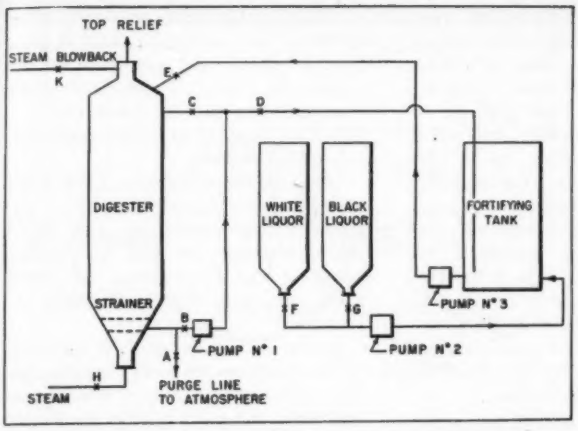


Fig. 1—Va-Purge procedure for a kraft operation: (1) Steam pressure is built up for purging through steam valve H; then valve H is closed and valve A opened; this entire operation may be repeated for a second purge, if desired. (2) The digester is then pumped with a mixture of black and white liquor, previously made up in the fortifying tank; pump No. 3 is not shut down until at least 3 minutes after liquor has appeared at the head relief; valve E will always be closed before pump No. 3 is shut down. (3) Steam valve K is now opened to provide pressure for impregnation step. (4) During impregnation the black and white liquor charge for the next cook is pumped to the fortifying tank from the liquor storage or measuring tanks by means of pump No. 2. (5) At the end of the impregnation, valve K is closed and valve D opened; at the same time, pump No. 1 is started and liquor is withdrawn to the fortifying tank, where it is mixed with that already there, and the liquor is then ready for the next cook.

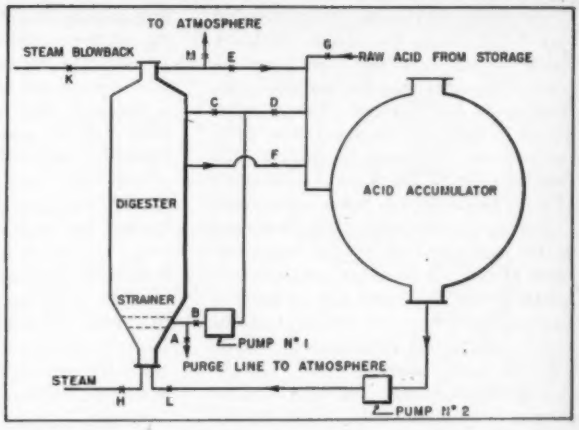


Fig. 2—Va-Purge procedure for a sulfite operation: (1) Steam pressure is built up for purging through steam valve H; then valve H is closed and valve A opened; this entire operation may be repeated for a second purge, if desired. (2) The digester is then pumped with the cooking acid from the accumulator by means of filling pump No. 2 through valve L; during pumping the circulating system (pump No. 1 through valve C) may be operated; if it is not, then any built-up steam pressure can be relieved through valve M; shortly before pumping is completed, valve M is closed and valve E opened; the filling pump (pump No. 2) is not shut down until at least 3 minutes after liquor is picked up at the head relief; valve L will always be closed before pump No. 2 is shut down. (3) Steam valve K is now opened to provide pressure for the impregnation step. (4) After impregnation, valve K is closed and cooking, either direct or indirect, is started; at the same time as pressure is built up, the side relief is removed through valve F. (5) If a soluble base is being used and a lower acid-to-wood ratio than with a calcium base is required, then excess acid may be removed through pump No. 1 and valve D to the accumulator before starting the cook

laboratory equipment may require a longer time than do full-scale digesters. With the latter it is not possible to bring the contents to cooking temperatures very rapidly. Hence, there is a considerable time available for natural penetration or diffusion above that provided in the impregnation period. As a result, the relatively long temperature rise necessary with large equipment allows non-uniformity of penetration to be evened out. For that reason variations from the Va-Purge technique as worked out in the laboratory are sometimes made in adapting it to conventional equipment.

The withdrawal of excess liquor will be dealt with in more detail in specific references to the alkaline and the acid processes. At this point it will be sufficient to bring out the fact that more liquor can be pumped into a digester whose contents have been previously pretreated by the Va-Purge process. This extra liquor is that which is taken up by the raw material to be cooked. It is equivalent roughly to the O.D. weight of that material. If this liquor has the same concentration as in the normal procedure, then it should be withdrawn after impregnation in order that the charge will remain as it would be without Va-Purge. Where there is a liquor circulating system, and particularly if the strainer is situated in the lower part of the digester, the withdrawal of this excess liquor presents no great problem. If that situation does not exist, then a strainer must be installed, if full advantage is to be taken of the pretreatment process.

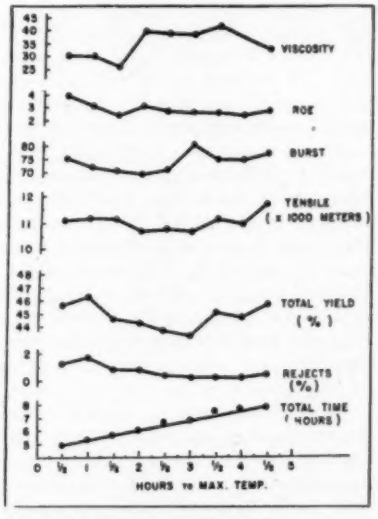


Fig. 3—Properties of sulfite pulps

The concept of withdrawing and removing some of the excess liquor after penetration leads, logically, to increasing the initial concentration in order to reduce the final volume below that normally used. Such a reduction of liquor with its high specific heat requirement in relation to that for the wood or other material allows the contents to be raised in temperature more rapidly than is possible with the normal volume of liquor left in the digester. The result is a marked reduction in the overall cooking time.

Carrying this technique a step further, it is possible to remove all the free liquor in the digester after penetration. The cooking can then be carried out with direct steam in the so-called "vapor phase," normally under pressure. This is not a new procedure, but it is made practical for the first time by the penetration achieved through the Va-Purge process.

Applied to alkaline process

Now let us examine in more detail the use of Va-Purge with the *Alkaline Process*. A diagrammatic sketch showing how Va-Purge may be incorporated into alkaline cooking is given in Fig. 1. It is assumed in this illustration that there is a liquor circulating system with the strainer in the bottom cone. After purging, the liquor is pumped to the digester from what is termed a (mixing and) fortifying tank. In this operation there may be introduced a novel feature not commonly used in alkaline mills. When the chips have been purged, they are in a condition to permit rapid penetration. Therefore, it seems inadvisable to pump the white and black liquor separately. For convenience it is better to mix the two liquors beforehand. Then, following impregnation, the excess is withdrawn to the tank where it can be fortified in preparation for the next cook.

The liquor may be more concentrated —in other words, may have less black liquor in the make-up. The liquor-to-wood ratio remaining for the cook can, therefore, be reduced below that normally used. A limiting factor, present in many mills, may be, however, the concentration of the white liquor available for fortifying the liquor withdrawn.

During impregnation there is a drop in the concentration of the liquor because of dilution from the moisture contained in the chips and also because of some adsorption of the chemical on the wood. With the liquor-to-wood ratio possible with conventional digesters during impregnation, the final concentration is approximately 75 per cent of the initial concentration. Also the chips have taken up a volume of liquor approximately equivalent to their own O.D. weight. Therefore, to keep the system in balance, the fortifying liquor must contain sufficient chemical to regain the initial concentration. Moreover, this chemical must be contained in a volume no larger than that left in the digester. With white liquor from the causticizing plant having a concentration of approximately 6½ lbs. of active alkali per cubic foot, expressed as Na_2O, the ratio by weight of liquor-to-wood left in the digester cannot be much lower than about 1.8:1. Thus, to gain the advantages of vapor-phase cooking in alkaline pulping, it is necessary to have a more concentrated chemical make-up, achieved by using strong caustic and perhaps some elemental sulfur, or by some degree of evaporation.

Apart from the reductions in time with the vapor-phase technique, the much lower liquor-to-wood ratios, made possible by reason of the thorough penetration, permit very rapid temperature rises and thus appreciably-reduced cycles even in liquid-phase cooking. The extra time required for the purging operations, including that when pumping is done separately from chip filling, can be more than made up in the reduced period of steaming to cooking temperatures. The magnitude of the time saving will, however, depend upon the efficiency made possible by the alterations that have been made to the equipment.

Applied to sulfite process

The same general considerations hold for the sulfite process, with the qualification, however, that the sulfite process is usually associated at the present time with the use of calcium bisulfite and, therefore, the degree of concentration of the cooking acid is limited. Hence, vapor-phase cooking is not possible with calcium bisulfite.

Fig. 2 is a diagrammatic plan of the conventional hot acid system with Va-Purge. The filling, pre-steaming and purging operations are similar to those already described. These are followed by pumping; but, in this case, the cooking liquor or acid contains a volatile gas, i.e. SO_2. As the acid comes in contact with the warmer chips, some of the SO_2 is liberated. However, this does not remain long in a gaseous form since wood, especially steamed wood, has a high affinity for such SO_2. Consequently, there is no material build-up of pressure during the pumping operations, provided the steam in the digester is condensed. In commercial trials it has been possible to fill the digester, for all practical purposes completely, during pumping with the head relief closed, while at the same time operating the circulating system to condense the steam.

With a calcium-base acid little reduction can be made in the acid-to-wood ratio. However, because of the complete penetration, the side relief can be removed immediately following the impregnation period and coincidental with the beginning of steaming. As a result, the side relief is generally more concentrated than in normal practice without Va-Purge.

The advantages to be gained through the use of Va-Purge with a soluble-base acid are much more striking since a more concentrated acid may then be used, and that makes possible progressively lower acid-to-wood ratios and, finally, vapor-phase cooking.

In the laboratory, using a calcium-base acid having a total free and combined SO_2 content of approximately 5.52, 4.30 and 1.22 per cent respectively, and an acid-to-wood ratio of 4.5:1, a series of sulfite cooks was made in which the time to maximum temperature was varied by half-hour intervals from ½-hour to 4½ hours. The Va-Purge pretreatment was used for all of them and they were cooked at a maximum temperataure of 140°C. The results of the chemical and physical tests on the pulps produced are shown in Fig. 3. From this it can be seen that very rapid temperature rises are possible without detriment to pulp quality.

In commercial practice, once complete penetration has been achieved through the use of Va-Purge, similarly rapid temperature rises are feasible. To do this will, however, require adequate pumps and lines or such adequate distribution of the steam as can be accomplished with nozzles. In most of the millscale efforts to apply Va-Purge to sulfite pulping thus far, such modifications of equipment have not been provided for a variety of reasons. Consequently, the procedure adopted has been a compromise between the best ultimate practice and something which may be considerably better than no pre-treatment at all. The *optimum* benefits can only be achieved with equipment designed specifically to meet the conditions found best for that technique. Except for a mill which is planning replacement or extension of facilities, or a company which is planning an entirely new mill, there are few places where the full advantages of the new technique can be demonstrated at mill scale or achieved with regular commercial production.

Nevertheless, by making some modifications (generally not too costly) and experimenting persistently and judiciously, combinations and compromises can be found for existing mill conditions that will mean substantial returns.

In few present-day mills is there adequate equipment for measuring the input and output of quantities of wood, steam, chemicals and pulp so that the benefits of a change in technique can be measured in precise quantitative terms. Also, the large batch digesters of present practice do not lend themselves very well to instrumentation and close control. Consequently, the benefits may only become apparent when the long-term balance sheet is analyzed.

Despite these difficulties, however, some of the adavntages of Va-Purge can be achieved even with present-day equipment, or the advantages can be taken to some extent—that is, the right compromise can be found for nearly every mill lay-out. To do this takes thought, time and a willingness to interrupt the flow of production to make modifications and run trials, with a confidence that the losses incurred temporarily to do so will be made up many times over by the later gains.

Fortunately, it has been found with Va-Purge that the extent of the modifications needed is not very great and no major new plant investment would be required at many mills. Generally, as we have pointed out, the chief requirements are larger connections, increased line pressures and larger strainers. For higher yields it has been found advisable to add multiple nozzles connected to a waste liquor pump to aid in blowing the pulp or the softened but still undefibred chips. Such changes do not take very long nor cost very much money.

Ideally, for a really fair and complete trial of Va-Purge, a digester should be taken off the regular production line, should be fitted with strainers when it does not already have them, should have provision for very rapid steaming, purging and introduction and withdrawal of liquor. It should also have a separate blow tank so that the pulp can be sampled, tested, handled separately and compared closely with the rest of the mill's production. Instruments and methods for accurate and comparative measurements of the charges, times, temperatures, pressures, yields, concentrations, pH values during cooking, etc. should be a part of the experimental set-up.

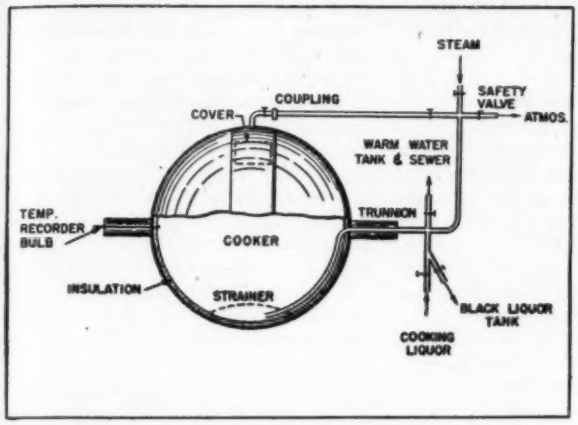


Fig. 1—Location of strainer and valve arrangement

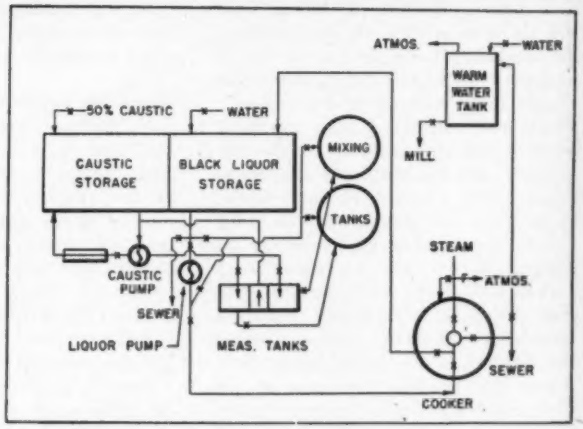


Fig. 2—Cooking liquor and chemical recovery system

Va-Purge process in straw pulping for corrugating board manufacture

W. H. PALM
HENRY J. OSTROWSKI*
Hinde & Dauch Paper Co. of Canada Ltd.

FOR THE PAST half century, straw has been generally accepted as an ideal raw material for the manufacture of corrugating board. It has a high hemi-cellulose content, as well as other non-cellulose constituents, which impart added stiffness, an important characteristic of this type of sheet. Probably, because of the rapid development in the wood pulping industry, little attention has been given, until recenty, to improving straw pulping methods. However, because of the possibilities of extending pulpwood reserves by the use of other cellulosic materials such as fibrous agricultural residues and by virtue of the excellent quality of corrugating board produced, a general revival of interest in the straw pulping industry has been in evidence over the past decade. For similar reasons, of course, straw is receiving more prominent consideration for many types of papers. The pulping method described herein would be equally applicable to the manufacture of any grade of straw pulp—for example, a readily bleachable character stock—by merely changing the conditions but following the same general procedure. Furthermore, new methods used in the manufacture of corrugatting board from heretofore unused wood species with good results stimulated interest in further improving local straw pulping methods. There was also a need for making a sheet of strawboard which would be competitive with other grades of corrugating medium currently being manufactured from both hard and soft woods, at basis weights lighter than the established basis weight of straw corrugating board.

Abridged from a paper presented at the 1953 summer meeting of the Technical Section of the Canadian Pulp and Paper Association, held at Saranac Lake, N. Y., June 4-6.

*Mr. Palm is vice president in charge of production, while Mr. Ostrowski is chief chemist, of the Trenton Division at Toronto.

Mill layout

Wheat and oat straw, generally supplied in the ratio of 70:30 (ratio varies, but all wheat with no oat straw is most desirable), is conveyed by an inclined belt from the straw shed to the digester room. The conveyor extends the full length of the room and is elevated, and the digesters are in a single row. The straw is discharged from the belt by a shearing board arrangement at each of the digesters as required. A hopper, fitted between the charging floor and the digester opening, is used when the fill is made. A gasket on the end of the hopper contacts the digester to prevent the steam, which is used for straw packing, from escaping into the room. There are ten 14-ft. diameter, insulated, rotary type digesters, which are rotated during certain steps of the cooking cycle at 3 minutes 10 seconds per revolution. These are driven by a main line shaft having a spur gear and clutch pulley arrangement at each of the digesters.

In the conversion to the Va-Purge process, each digester has been equipped with a Foxboro steam flowmeter—a pressure controller and recorder, and a temperature recorder, the last-mentioned having the bulb connected through one of the trunnions. For obvious reasons, the temperature recorder bulb is placed in the trunnion opposite that through which steam, liquor, etc., are admitted or discharged. There are two sets of instruments mounted on one panel for each pair of digesters. Each digester has been equipped with a strainer compartment located as is illustrated in Fig. 1, which also shows the valve arrangement. The strainer is made of 5/16-in. steel plate, 2½ ft. x 5 ft., and tapered lengthwise to fit inside the digester shell. Holes are 5/16 in., drilled and staggered on ¾-in. centers. The strainer is reinforced with rods across and two ribs lengthwise to withstand the high pressures created without collapsing, and is connected by a 3-in. pipe leading through the trunnion to permit the introduction and/or withdrawal of liquor and the entry of steam.

After cooking, the straw stock is discharged from the digester by gravity through two diametrically opposed 24- by 44-in. oval openings onto an inclined floor from which it is sluiced, as required, by high pressure water hoses into a canal which, in turn, conveys it to the point of transfer to the beater room.

The cooking liquor and the chemical recovery system are innovations which can be considered as the heart of the system. These are illustrated in Fig. 2. Fifty per cent liquid caustic soda, delivered in tank cars, is dumped by gravity into a concrete, insulated, steel-lined tank having a capacity of 10,700 Imp. gallons. From there 30-33 gallons, depending on the grade of the straw, are pumped for each cook to two measuring tanks equipped with a return overflow. The two tanks are necessary in order to ensure a uniform blend of cooking liquor in the two mixing tanks converted from the previous system. The caustic pump

is a centrifugal Fairbanks-Morse Type 505, single-stage with side suction. From the measuring tanks the caustic dumps by gravity to the two mixing tanks previously filled with return black liquor, which was transferred from the black liquor storage tank (capacity 22,000 Imp. gallons), and the mixture is agitated to produce the fortified cooking liquor. From there the charge of 7600 Imp. gallons is pumped to fill completely the digester, which has previously been packed with straw. After the impregnation period, the exhausted liquor is forced back by steam pressure through the strainer to the black liquor tank. About 7000 gallons are returned per cook, and 600 gallons of water are added each time as make-up. This make-up is taken ordinarily from a hot water storage tank to which condensate accumulations from purging operations are pumped and which is heated by blow down-steam, when and as it is available. Tank capacity is 3000 Imp. gallons. This dilution is important and necessary to hold the liquor viscosity within manageable limits. The temperature of the cooking liquor usually comes to an equilibrium of 82-86°C, the temperature required for optimum operations. When the temperature drops below 80°C, steam is added; and when it goes above 86°C, more cold water is added. For uniform operations, the level of the black liquor is held in a narrow range, as is illustrated by the liquor level chart in Fig. 3.

The liquor pump is manufactured by Canadian Allis-Chalmers and has a double suction, closed impeller, and is made of cast iron. It is so connected that it has a double inlet, pumping either from the black liquor tank or cooking liquor from the mixing tanks.

The details of the cooking procedure used since November 1951 are shown in the following table:

Typical cooking curves with the pressure and temperatures recorded for three cooks are shown by Fig. 4.

Operation and technical data

At the beginning of operations using Va-Purge, caustic usage was 325 lbs. per cook, cooking liquor tested over 5 grams per liter as active Na_2O, and the chlorine number on the pulp was 12 to 13. Since then, by improved techniques, gradual changes have been effected, and in recent operations, caustic usage has been reduced to 248 lbs. per cook, cooking liquor tests 2.5 grams per liter as active Na_2O, and the chlorine number of the pulp is 15 to 17. On this latter basis, there is no active soda remaining in the black liquor (pH around 9.5), nor in the liquor at the time of dumping a cook (pH around 8.8), so the conditions can be said to be optimum. The specific gravity of the cooking liquor reaches an equilibrium at 1.035-1.040, equivalent to a solids content of 66-72 grams per liter.

Up to 9000 lbs. of straw are charged per cook in one fill. The bone-dry cooker yield is over 70 per cent and is determined by the "bag method," where 400-500 grams are cooked in an open-mesh cloth bag along with the straw in the cooker. Fig. 5 is a chart showing the relationship of cooker yield to chlorine number.

Steam consumption is 1800-2000 lbs. per ton of straw pulp with a higher usage during winter operations.

Operation problems

As expected in a new mill development of this kind, a number of operating problems arose, which have since been solved. The outstanding ones of these and the solutions found are summarized as follows:

Strainer—Liquid caustic was chosen to replace the lime-soda ash cooks as the lime would plug the strainers. The first strainers were of too light a construction and collapsed. The heavier type described in this paper was then designed.

Caustic Addition—Excess caustic was used at the start of the Va-Purge runs to ensure that all cooks would be sufficiently soft to handle through refiners, etc. Subsequently, this was found to be unnecessary, as the cooks so produced were too soft and caused numerous breaks—particularly at the presses—on the machine due to over-treatment and stickiness. This was overcome when caustic was reduced and harder cooks were produced.

Cooking Liquor Temperature — The temperature of the cooking liquor was found to be critical. Liquor with a temperature above 90°C could not be pumped, while below 75°C it did not impregnate the straw properly and produced a raw cook. Because of the intermittent nature of the early trials, the low temperature was frequently the cause of raw cooks at that stage of the development. Arrangements are now being made to use a higher liquor temperature at the time of charging, and it is believed that this may accelerate the operation at several stages of the cycle.

Caustic Storage—A cement tank was lined with a material that was supposedly resistant to 50 per cent liquid caustic soda. But the coating failed to stand up, probably due to a wall condition of the tank. A light steel lining with glass insulation between the steel and concrete was then provided, and this seems to be entirely satisfactory.

Pulp Uniformity—With the Va-Purge process, it was found better to cook a mixture of sound and weathered straw than to cook these separately. Weathered straw, cooked separately, impregnates poorly and retards drainage, thereby interfering with the cooking schedule. A further step toward improved uniformity was to adjust the caustic charge to suit the grade of straw. The grade is estimated by the cooks and is based on the weathered straw content. The chlorine numbers are also used as a guide.

Black Liquor Return—In the original design, the black liquor was returned through a common header from all digesters to the black liquor tank. As more digesters were put into operation the frequency of pressure interference from other digesters increased, and at times it was difficult to relieve down to atmospheric pressure before dumping. To overcome this, another line was installed, so that there is now one for each five digesters. Piping arrangements to provide for liquor removal are very important in an adaptation to use Va-Purge. They will depend entirely on the cycle rotation to be met.

Straw Packing—So far, this problem has not received serious attention, since

Cooking Procedure

Cycle (Time from start)	*Operation*	*Details*
0 hrs., 00 mins.	Filling digester	Fill for 2 hours, and, at the same time, steam from the bottom as heavily as possible.
2 hrs., 00 mins.	Purging	(a) Rotate digester and steam through strainer until recorder reads 270° F. (b) Shut off steam and blow down to sewer and warm water tank until the digester pressure is 10 lbs.
2 hrs., 15 mins.	Pumping	(a) Pump cooking liquor from mixing tank with digester rolling until the pressure in the digester reaches approx. 50 lbs. Maintain 2 mins. (b) Shut off alkali line and connect top steam.
2 hrs., 45 mins.	Draining	(a) Open valve to black liquor tank and then steam through the top connection until the pressure reaches 50 lbs. (b) Maintain this pressure for 40 minutes.
3 hrs., 25 mins.	Rotation ceases; draining continues	(c) Disconnect top steam supply and continue draining to black liquor tank for 1 hr. with strainer on the bottom (i.e. digester is not rotating).
4 hrs., 25 mins.	Cooking and blowing down	(a) Rotate the digester for 1 hr. and 20 mins. and, at the same time, have the valve to the black liquor tank open. (At the end of this period, the pressure should be reduced to 0 lbs.)
6 hrs., 45 mins.	Dumping	Requires approximately 1 hour.
5 hrs., 45 mins.	Cycle completed and filling for next cook commences	

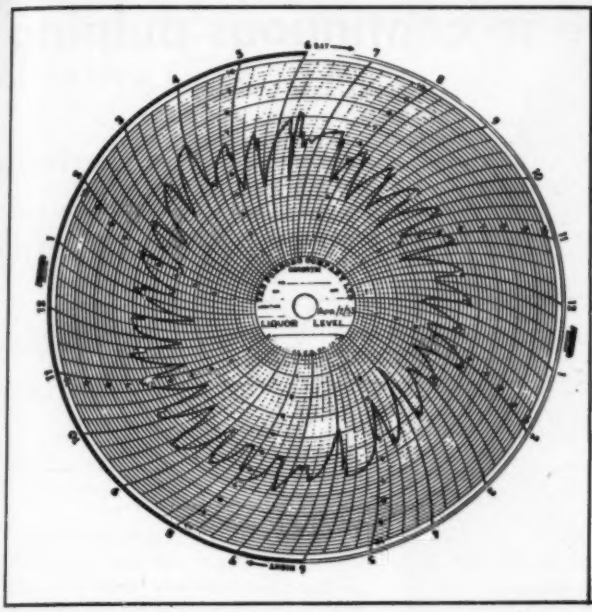


Fig. 3—Liquor level chart on black liquor tank

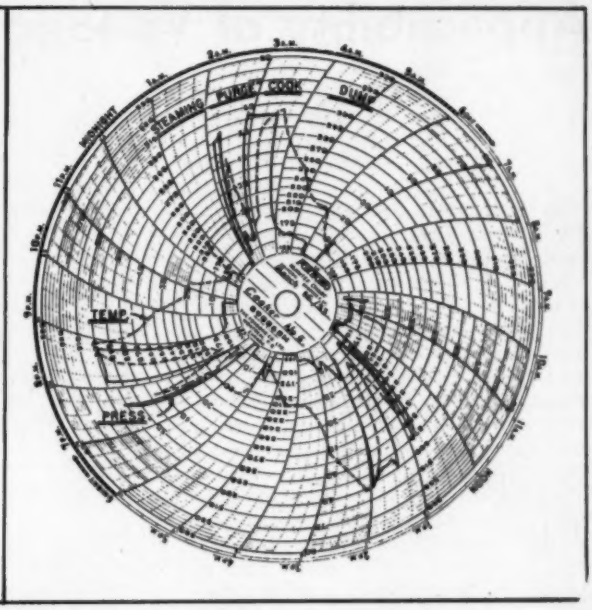


Fig. 4—Cooking curves for three cooks

pulp production has not been critical. However, as a machine speed-up program progresses, more attention will be paid to means of packing straw into the digesters.

Liquor Pump—As production is being gradually speeded up, the liquor pump in the present set-up is coming closer to constant operation, and any delay in the pumping schedule will interfere with production. To avoid this, some consideration is now being given to fortifying the liquor in the black liquor tank. This will cut the pumping time by half, since the pumping to the mixing tanks will be eliminated. However, the black liquor tank would have to be lined and equipped with an agitator. Also, under these circumstances, the liquor level would have to be more carefully controlled.

Results

The results, based on over a year of mill operation with the Va-Purge process, are as follows:

Yield—The digester yield has increased from approximately 60 per cent to over 70 per cent. However, tons per cook have decreased slightly because one fill is now used instead of the three in the earlier type of cook.

Time—The overall cooking cycle has been reduced from 10 hours to 6¾ hours.

Paper Machine—The absence of lime throughout the system and the harder pulp—resulting in freer refined stock—now being delivered to the wire, has contributed considerably to paper machine speed up. The high lime content inherent in straw pulp produced by the lime-soda ash method tended to fill up the felts and wires, in addition to which it contributed greatly to creating a slower condition in a stock which was already too slow for optimum operating characteristics. Needless to say, the presence of lime was certainly detrimental to good corrugator operation. It should be mentioned in passing that a number of improvements have been made to the paper machine, such as the addition of dryers, added press parts and new drives, to enable the machine to handle the higher speeds which are attainable from the kind of stock now being delivered to it.

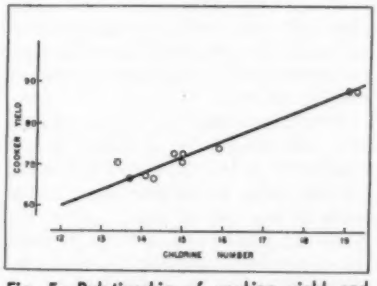


Fig. 5—Relationship of cooking yield and chlorine number

At the present time the machine speed is just under 600 fpm, as compared to a former normal of around 430 fpm. It is interesting to note that in accomplishing the foregoing no change in wire length or in the number of table rolls has been made. Eight flat boxes are used continuously now; whereas, heretofore, six were usually employed, and sometimes, under difficult conditions, eight were needed. The inlet head has, of course, of necessity been increased, and several problems in head box design have now to be worked out as a result of the greater volume being handled through the original unit.

Quality—The quality as measured by the Hinde & Dauch ring crush tester has so increased that it has made it possible to decrease the weight of the regular grade of strawboard from 32 lbs. per M sq. ft. to 26-27 lbs., while realizing a 15 per cent increase in the ring crush test. Apparently this increase can be attributed to the absence of lime, the selective cooking action of this type of cook, and a build-up of non-cellulosic constituents in the re-cycling of the liquor. Pulp washing has been abandoned entirely. Consequently, the soluble solids produced are carried through the system and into the sheet. These elements have a favorable effect on sheet stiffness.

Production—It has been found that with six digesters the total mill production, in terms of square feet of output, can be maintained, whereas this required ten digesters previously. In recent operations a 25 per cent increase in production has been realized. As the machine speed-up program progresses and all of the digesters are put into production, a potential of over 40 per cent increase in production is indicated.

Chemical Usage—Previously 650 lbs. of hydrated lime and 400 lbs. of soda ash were used per cook. This has been replaced by 248 lbs. of caustic soda and represents a cost saving of 33 per cent per ton of straw pulp.

Handling—The use of liquid caustic has considerably improved the working conditions and handling.

Stream Pollution—The re-use of the liquor, the production of a harder pulp and the absence of lime have decreased the solids content and volume of the effluent to the sewer.

Applicability of Va-Purge to continuous pulping

R. K. STRAPP*
Pulp and Paper Research
Institute of Canada

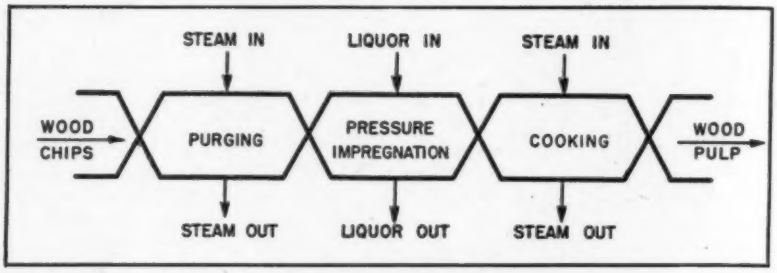
FOR SOME TIME there has been considerable talk in the pulp and paper industry to the effect that it would be only a matter of time until most mills are carrying out their pulping operations on a continuous basis. Several continuous systems are already in commercial use. The obvious advantages of continuous pulping are measured in such things as: (1) smaller units, of lower capital cost; (2) closer operating control; (3) elimination of the peak load conditions that require both additional capital plant for storage and heavier electrical equipment; (4) less space; (5) lower maintenance costs, manpower and inventories of spare parts; (6) simpler foundations and smaller buildings, and (7) reduced overhead.

The vapor-phase method of cooking has been used with spruce-balsam and mill-scale batch equipment in both a sulfite and a kraft operation. The Chemical Pulping Division of the Institute has, in addition, run scores of vapor-phase cooks, also in batch equipment. They have involved the use of species ranging from northern spruce to southern pine, from eastern hardwoods to western Douglas fir. Grasses, straw, and various mixtures of softwoods and hardwoods have also been pulped by the vapor-phase method. In some cases, the results were spectacular; in others, it must be admitted that further study would be required to find the appropriate range of operating conditions to produce the most satisfactory product. If Va-Purge/vapor-phase techniques can be applied successfully to continuous systems, then there is already a wealth of experimental evidence to suggest that these various combinations of species could be used as successfully on a continuous pulping basis.

The surges in steam and chemical demand, and other abnormal variations that are certain to develop from time to time and to pose serious problems in large batch operations, should not have so severe an impact on a continuous system. They can be met as they occur because the whole operation is more closely synchronized, and there need not be the lengthy delays between, for example, a batch of poor wood at the woodroom and its eventual pulping in some digester.

Abridged from a paper presented at the 1953 summer meeting of the Technical Section of the Canadian Pulp and Paper Association, held at Saranac Lake, N. Y., June 4-6.

*Mr. Strapp is assistant head of the Chemical Pulping Division.



Schematic diagram of continuous pulping with Va-Purge

The experience of the Institute with its pilot model equipment, confirmed by the laboratories of a number of Canadian companies with comparable pilot model equipment, is that mill conditions and mill practices can be simulated rather closely—with one notable exception. This is that the pulp from pilot model digesters is invariably of much higher strength than pulps produced in the mills to the same degree of delignification. The reason for this phenomenon is not yet known. But, if size is a major factor, the production of pulp in a continuous digester of dimensions somewhat comparable to those of the pilot models should yield a comparably high strength. It has become almost axiomatic in our industry that, no matter what one does in a laboratory digester, he cannot possibly make pulp as *low* in strength characteristics as is produced under the same conditions in the large batch digesters of existing mills.

To a large extent, the competitiveness of a continuous pulping system is governed both by the *speed* at which it can function (the production that can be made in any unit of time) and by the *grade* and *quality* of pulp it can produce. As we have seen, the very essence of the Va-Purge and vapor-phase techniques is the speed they make possible in penetration, in rising to temperature, and in cooking. With small equipment like the 2-cu. ft. digesters at the Institute, the time required for the successive steps in a total cycle from pre-treatment to blowing of the pulp has been reduced to less than an hour, and can probably be reduced still more. Moreover, because purging achieves such uniform penetration, it should be possible to produce pulps of high grade and quality in existing continuous systems, just as has been done in batch systems. Some existing continuous pulping equipment is at present rather limited to semichemical grades because it cannot include the time needed for forced penetration and diffusion without Va-Purge and still meet competitive production schedules. It is clear, therefore that the prompt application of the Va-Purge and vapor-phase methods to continuous pulping would be a logical and most significant development for the industry.

The challenge of bringing together the advantages of the Va-Purge/vapor-phase techniques and those of the continuous system was, indeed, so great that the Institute has recently built a very simple, continuous pulper. It is rather a "Rube Goldberg" and bears no resemblance to what might be the design for commercial use. It consists of a simple 21-ft. length of 3-in. steel pipe, equipped so that material being moved through it can be successively subjected to the cycles described in the paper by Dr. Ross —that is, purging, pressure impregnation and diffusion, and cooking.

Operated continuously, a unit of this size could produce about 100 lb. pulp per day. It was not built as a research tool for a long series of controlled investigations, but, rather, simply to determine whether the purging, pretreatment cycle could be conducted on a continuous basis synchronously with a continuous cooking operation.

We are pleased to report that, within the past two weeks, with this equipment we have been able to purge continuously and to produce continuously from commercial spruce chips a slush grade kraft pulp in 45 minutes from the entry of the raw chips at one end of the pipe to their discharge at the opposite end. The time they were at reacting temperature was 30 minutes.

This was merely a demonstration run. We do not believe it represents the optimum pulp that *could* be produced even with this crude equipment, which has not been operating long enough for us to have made a series of comparative cooks.

Effective slime control with colloidal silver

Dr. and Mrs. Z. V. Moudry testing effectiveness of "A-36"

APPROXIMATELY A YEAR ago the research laboratories of United States Movidyn Corp. began exploring the possibilities of developing a special formulation containing Movidyn (a colloidal silver suspension) for use as a slime-controlling agent in the pulp and paper industry. The Institute of Paper Chemistry, Appleton, Wis., was consulted to ascertain specialized needs of the industry. These needs were incorporated into the criteria established for evaluation of experimental formulations.

The original Movidyn formulation was developed by Z. V. Moudry in Czechoslovakia. When the parent corporation was nationalized by the Czechoslovakian Communist government in 1948, Dr. Moudry, now vice president of United States Movidyn, transferred this project to the United States, where the federal government soon became interested in the development of Movidyn in recognition of its potential value to national defense, for use against possible contamination of our water supplies in germ warfare.

As a result of the investigations carried out by the federal government a number of improved Movidyn formulations have been developed. These are colloidal suspensions of metallic silver in a protective medium. The suspensions remain stable in the temperature range 32°—120°F. and, when added to water supplies, are tasteless, odorless, colorless, and non-corrosive. They also have a strong residual bactericidal effect and will activate glass, textile, rubber, wood, metal, ceramics, etc.

Research on Movidyn as a slime-controlling agent carried out by Movidyn Corp. included elaborate chemical and biological studies.

Chemical studies

It was first necessary to establish compatibility of the Movidyn formulations with the different types of white water, sulfite pulps, bleached pulps, soda pulps, old paper pulps, clays, starches, fillers, dyes, and other basic raw materials used in the production of pulp and paper.

Next, compatibility and stability of these formulations had to be established in the presence of various other materials, such as different types of steel, alloys, wood, glass, lubricating oils, and various fabrics. The formulations also had to be evaluated as to their stability to light. A total of 137 formulations was prepared and screened in the course of this investigation. Those meeting the necessary requirements were then subjected to biological testing and screening.

Biological studies

Bactericidal effectiveness of the various formulations was determined according to the procedure of King, which consists of adding known amounts of a disinfectant to aliquot portions of white water and, after an appropriate contact period, determining the "percentage killed" using bacteriological plating techniques.

Over 130 screening tests were conducted. Any formulation failing to give a minimum "90 per cent killed" in six hours of contact were eliminated. The results showed that Formula "A-36" was the most effective slime-controlling agent.

"A-36" was then tested to determine its effectiveness in comparison with that of nine leading commercial products currently used as slime-controlling agents. This study demonstrated the exceptional effectiveness of "A-36" as a slime-controlling agent, and it was then decided to run a series of tests in a large paper mill located in the eastern section of the United States. This study involved a complete evaluation of "A-36" against commercial Toxicant-X, which was used at the rate of 720 pounds per 24 hours.

The results of this experiment showed that the average number of micro-organisms surviving the treatment with Toxicant-X used at the above rate was about 10,300,000 per ml. With the use of "A-36" the number of micro-organisms dropped to 253,000 after eight hours, to 3,500 after 24 hours, and to 200 after 54 hours.

When used on a commercial scale, Dr. Moudry suggests that the "A-36" formulation be used at the initial rate of 100-200 pounds during the first day and then at the rate of 50 pounds during each of the succeeding days. The company is also prepared to provide the services of a bacteriologist for a period of about five days to establish the optimum rate of application of "A-36" to meet the particular requirements of each individual mill.

Job Evaluation . . .

—the installation and administration of a program

Part 6 of a series

J. A. KELLER*

Eleven Steps to Improved Employee Relations And Cost Control Through Job Evaluation

1. —Obtain management support
2. —Obtain employee co-operation
3. —Determine over-all policy
4. —Select the plan
5. —Select the job requirements
6. —Rate existing jobs
7. —Establish the wage structure
8. —Select the administrator
9. —Install the program
10. —Maintain the program
11. —Control and audit the job classification

JOB EVALUATION, like other management techniques, depends on capable and continued administration for maximum effectiveness. In earlier articles we have outlined the selection and use of a job evaluation plan and the establishment of an adequate wage structure. The final steps needed to provide a sound wage program include:

1. selection of a qualified person to administer the program;

2. installation of the plan to cover present jobs and employees, and

3. establishment of procedure to insure proper maintenance of the program.

Regardless of whether the initial job ratings are performed by a plant committee, an individual in the company, or a management consultant, the selection of an administrator to be responsible for job evaluation is important. Without a designated position in the plan of organization with properly allocated authority and responsibility, it is very difficult to realize full benefits of a good job evaluation system. It is almost axiomatic that wage administration problems arise because of poor administration of an adequate plan, rather than failure of a basically poor plan.

The function of administering a job evaluation program is usually placed under the industrial engineering or the industrial relations organization. When deciding which organizational function is to be responsible for the program, the following questions are pertinent and will be influenced to some extent by the size of the company.

1. Which function is most likely to provide adequate job descriptions and standards of comparison?

2. Which function is most likely to give careful and continued administration of the program?

3. Where can the job evaluation program be placed to achieve best coordination with the payroll, wage incentives, and employment department?

4. Where can job evaluation be placed to provide the maximum amount of cost control?

Scientific attitude

In large companies that employ many engineers, job evaluation is best placed under the industrial engineering organization where there is more likely to be a scientific attitude on setting standards, rather than the emphasis on individual differences stressed in industrial relations departments. Smaller companies, though, have often found that job evaluation can be handled very satisfactorily by the same people that handle other employee relations functions.

Selecting the man to administer the job evaluation program is not always easy since the man must have:

1. sufficient stature to deal with several levels of supervision, especially when dealing with supervisors who try to use the job grades as the scapegoat for many unrelated personnel problems;

2. sufficient stature to deal with the unions whenever necessary in discussing the wage administration program or individual job grade grievances;

3. ability to deal tactfully with employees;

4. ability to think and write clearly and concisely, and

5. ability to set standards which rate the job requirements and not the individual performing the job.

The man selected for the job may be hired specifically for this work, or he may be transferred from work in the industrial relations or industrial engineering departments, but the important thing is to make someone directly responsible for the program and its maintenance.

Installing a program

The actual installation of a job evaluation program involves:

1. Placing present employees in proper rate ranges according to their job classification.

2. Making pay adjustments where necessary to bring employees within their proper pay rate ranges.

3. Setting up forms and records that
   a. provide easy control of the program,
   b. are simple to understand and maintain,
   c. provide current information,
   d. provide means of reflecting changes,
   e. provide means of informing all interested parties of changes in job content or working conditions.

At this stage the one who is to administer the program should take it over.

Since the organization of work in any company is a dynamic thing, job evaluation is not a "one-shot" proposition. Jobs change—new jobs are added and other jobs are combined or dropped. Job descriptions and ratings should be audited frequently to see that they reflect the work as currently being performed.

Sound maintenance and control of a job evaluation program should include:

1. A systematic auditing to insure
   a. adequate job descriptions,
   b. proper relationships between jobs,
   c. a proper distribution of the number of personnel classified under each job grade. This will tend to reduce the possibility of top-heavy organizations.

2. Adequate publication of job descriptions and other information for the employees, supervisors, and the employment department.

3. Continued training of supervisors and other interested personnel such as employment interviewers in the application of job-grading principles.

Job evaluation, given management support, employee cooperation, and sound administration can be a valuable tool in the paper industry in developing improved employee relations and cost control.

The next article will cover the evaluation of executive and supervisory jobs. In a succeeding article we will discuss compensation of executives. These last two articles are not directly part of the series on job evaluation, but are closely allied to that subject.

*Vice President, George Fry & Associates, consulting management engineers, Chicago and New York, N. Y.

AS EARLY as 1765, paper made from wasps' nests, saw dust, and shavings, was prepared by J. C. Shaffer of Regensberg, Germany, and used in a book published by him.

THE *Working* DAY of a typical papermaker of the 1700's was 12 hours long with no time off for lunch! The men kept right on working while eating their food.

Lacking sufficient cotton, the Germans during World War I, used huge quantities of highly purified pulp, prepared as for papermaking, in the field of ***EXPLOSIVES*** ....

Odd Bits .... CARDS with "TELL-TALE" spots are being introduced for recording relative humidity in dehydrated packages. They come with 3 or 6 spots: 3-spot cards show relative humidities of 65%, 40% and 30%; 6-spot cards are graduated from 10% to 60% .....

Donald R. Dick
1953-54 President

Harry E. Weston
Secretary-Treasurer

Gordon K. Singletary
1952-53 President

Year's progress keynotes 35th Superintendents meeting

PRACTICAL APPLICATION of the industry's latest technological developments was the keystone of the 35th annual meeting of the Superintendents Association, staged in Atlanta June 8-10. More than 600 delegates from all parts of the United States and Canada attended the three-day gathering at the Atlanta-Biltmore Hotel.

Background theme for the convention was the tremendous industrial growth of the South during the past decade, with the paper industry one of the leaders in opening new commercial frontiers south of Mason and Dixon's line. M. L. Wilson, an industrial engineer on the staff of Georgia Power Co. at Atlanta, made this abundantly clear in an address at the annual Industrial Affiliates Recognition Dinner. "Since World War II," he declared, "the paper industry has spent approximately one billion dollars in the South on expansion and new mills. This figure does not include the large sum expended for the acquisition of pulpwood acreage."

The annual business meeting on the opening day of the convention saw the election of Donald R. Dick as 1953-54 national president. Labor relations manager for Howard Smith Paper Mills Ltd. in Cornwall, Ont., Mr. Dick succeeds Gordon K. Singletary of Brunswick Pulp & Paper Co., Brunswick, Ga. The new president officially received the gavel of his office at the gala annual banquet that brought the meeting to a close.

Problems of the industry—technical and non-technical alike—were discussed in numerous general conferences, forums, and technical sessions. Spokesmen for all facets of papermaking, from the front office to the woodyard, combined their special talents and experience to bring to the panel discussion groups and forums reports on the recent developments in the industry's continued quest for better methods and processes for better pulp and paper.

Paper and the Diplodocus

Continuing research will contribute substantially to the future growth of the paper industry; trained personnel and technical know-how will not let it die. This expression of confidence was voiced by Reuben B. Robertson Sr. of The Champion Paper & Fibre Co., Canton, N. C., as he addressed the opening general session.

"We are living in the Atomic Age, and the methods of the Horse and Buggy Days will not suffice," he warned. "When rapid change is the law of life, one must achieve adaptation or perish. Smug complacency spells disaster. . . . We of the Paper Industry will not allow ourselves to meet the fate of the mastodon, the diplodocus or the dodo."

Rose tinted glasses

There is much room for optimism in spite of the grave political and social problems that face the world today, Mr. Robertson said. Our American way of life based to a great extent on the optimism of American industry has produced progress never before dreamed. Our standard of living has increased 150 per cent in the past 50 years, and we have literally walked away from the rest of the world. "I must confess," the speaker declared, "that in spite of the confusions created by communist aggression, I still look at the future through the rose tinted glasses of optimism."

Outstanding growth during the past half century has but opened the way for still greater progress in all industry and especially in paper manufacturing, Mr. Robertson said. "Despite the advent of plastics and other new materials, the pulp and paper industry ranks sixth in value of goods produced, with an annual output worth $6 billion. Annual U. S. consumption of paper and paperboard is now about 31,000,000 tons, 14

Superintendents Association Five Vice Presidents

Harry E. Hadley
1st Vice President

Howard H. Street
2nd Vice President

M. J. Auchter
3rd Vice President

Albert E. Bachmann
4th Vice President

H. E. Wehr
5th Vice President

GALA ANNUAL BANQUET staged in the exposition hall of the Atlantic-Biltmore; new president Donald R. Dick formally received gavel of his office.

times as much as in 1900. Some experts believe that it may reach 42,000,000 tons in 1960. . . . Paper has become one of the yardsticks of national cultural status. Our per capita use of paper is the highest in the world, and it parallels our living standards.

Timely action

". . . Timely action is important. As one economist says, the innovators hold the key to survival or growth."

Mr. Robertson strongly emphasized the need for attracting more and better men to the industry. "I hope and expect to see the use of incentive plans of payment broadly extended," he concluded. "Our industry is very wisely spending a substantial number of millions of dollars for research, and the expenditures are bringing worthwhile results. Top flight reseach men are hard to find—they are not, as we know, just ordinary technicians. . . . We must remember that we are dealing with human beings and must content ourselves with something less than perfection; tolerance and sympathetic consideration are of vital importance."

Good relations, good production

Industrial relations in all phases of manufacturing from the raw material to the consumer was brought into sharp relief at the general conference and forum on the afternoon of the first day. In charge of the program as chairman was Lee M. Bauer, production manager of the paper division of Ecusta Paper Corp., Pisgah Forest, N. C. His co-chairman was Walter B. Morehouse, Nopco Chemical Co., retiring chairman of the Industrial Affiliates Committee.

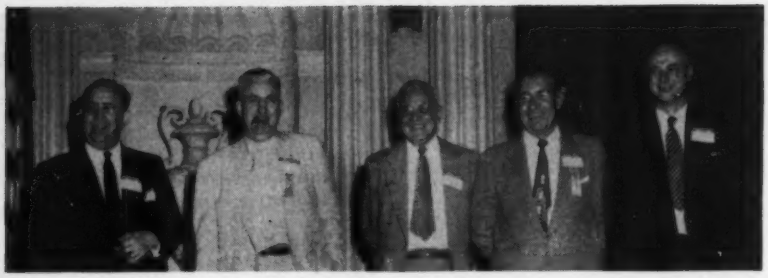
Community Relations

The current community relations project of the American Paper and Pulp Association was emphasized in its importance to the welfare of the paper industry by Donald M. Rochester, secretary of APPA's Community Relations Committee. He referred to the statement attributed to the late Hugh J. Chisholm, founder of Oxford Paper Co., who declared, "Industry is for man, not man for industry." If all industry had followed that policy, Mr. Rochester added, there would never have been a need for this project.

The speaker explained that the larger firms usually have good relations with community and employee, as have the smaller firms with up to 250 employees. ". . . But we have a problem in our industry with mills that employ from 300 to 1,000, where the day-to-day contact is impossible, and where up until recently the management has felt that it could not afford an additional man or two to spearhead the community and employee relationships."

Discussing the manner in which the APPA has gone about establishing various community relation programs, Mr. Rochester gave credit to R. A. McDonald, formerly of Crown Zellerbach Corp. and now with East Texas Pulp & Paper Co., who urged the executive committee and board of governors to sponsor the movement; Nathan Bergstrom of Bergstrom Paper Co. in Neenah, Wis., who was instrumental in setting up the model after which the present program is copied, the Information Service—Wisconsin Paper Industry; Dwight Thomson of The Champion Paper & Fibre Co., Hamilton, Ohio, the present chair-

AFFILIATES RECOGNITION DINNER at which M. L. Wilson of Georgia Power Co. was the featured speaker



THE PAY-OFF CONFERENCE on the final day of the convention; speakers were (l to r): G. W. E. Nicholson, Donald R. Dick, E. J. Gayner III, Gordon K. Singletary, and R. Burke Morden

man, and E. W. Tinker, executive secretary of APPA.

Supervisor's responsibility

It is impossible for any firm no matter how small or large to do an efficient and profitable business without well trained and dependable supervisory personnel, according to A. J. Miller Jr. of the Mead Corp., Chillicothe, Ohio. Speaking on the general conference program, he said that the supervisor must pass on the policy of his company; and, even more important, he must explain the reasons behind that policy.

The supervisor needn't do the job alone, he continued, but has many aids. No matter how many channels of communication he has, however, he must keep in mind the "wants of the worker" in order to be effective in bringing to the employee his company's "message." Among these wants are: security, recognition, fair wages, opportunity, and a reasonable voice in determining policies that affect him.

Management's responsibility

One of the greatest transitions in the life of any man comes with his promotion from the ranks to the management level on the basis of his ability to do a job, Harrison F. Dunning told those attending the general conference. The general operations manager for Scott Paper Co. declared that that transition "needs the help and guidance of management."

By no means should the new supervisor be told to "go it alone" when first he finds himself a part of management, Mr. Dunning continued. To the contrary, he should be given: (1) Good and thorough training; (2) constructive help, criticism, and attention; (3) indication of real patience; (4) encouragement to offset discouragement; (5) a complete written manual of company policies; (6) a clear definition of responsibilities; (7) a short written history of his firm; (8) plenty of support by specialists in the fields with which he will come into contact; (9) information on the terms of labor contracts, and (10) a minimum of paper work.

Furthermore, the speaker warned, the new member of the management family must plan his work well to do a balanced job of supervision. Any one area of his job—such as quality, personnel, safety—must not be given too much attention to the exclusion of the rest. Neither must it be ignored, but should draw a proportionate share of his hours.

Safety and management

Concluding the general conference program, Robert D. Gidel, staff representative of the National Safety Council, declarerd that "selling safety, like selling production, is a continuous and necessary job." The sales job, he said, is primarily the chief's responsibility; the job, however, doesn't mean a thing unless the chief can get complete interest on the part of the individual worker.

"Selling the individual employee," Mr. Gidel continued, "and keeping him sold is the constant job of both the boss and the supervisor. This selling job is the key to success in safety. The big problem, or stumbling block, in the path of safety these days is that the boss too often tries to divorce safety from production . . . There is a constant battle for quality and production. Safety is just one of the factors in this constant battle. What good are schedules, planning, expensive machinery and materials unless you have the manpower constantly available to use them?

With growth, a need

Progress and expansion in the paper industry—as in every industry—have brought about an increasing need for the exchange of ideas and thoughts. An organization such as the Superintendents Association is an apt vehicle for satisfying that need.

Addressing the final general session, G. W. E. Nicholson, executive vice president of Union Bag & Paper Corp., declared, "We are getting away from the very early days of secrets. More and more the management of our industry realizes that it is necessary to send men to visit mills and to talk to their colleagues in order to remain in the forefront with the new things going on in the industry."

Mr. Nicholson expressed the opinion that no company is large enough to stage its own meetings and disregard the rest of the industry, and for that reason associations are vital to the welfare of all firms. "As you know," he continued, "we are moving away from the old days of rule of thumb in our operations. . . . Whether we like it or not, our customers are asking for specifications and test requirements more and more on the product we sell, and we are doing the same in our purchasing, whether it is raw material or equipment.

The moral and spiritual

Union Bag makes it a practice, the speaker said, to send top men to many meetings for the purpose of learning new techniques and methods that they themselves can apply to their work. However, these men are required to submit written reports on such gatherings, and "we learn a good deal about the

R. B. Robertson Sr.
Champion

M. L. Wilson
Georgia Power Co.

R. Burke Morden
Affiliates Chairman

W. B. Morehouse
1952-53 Affiliate Ch.

C. D. Coffman
Converting

Walter Sherman
Sulfite

D. M. Rochester
APPA

A. J. Miller Jr.
The Mead Corp.

H. F. Dunning
Scott Paper Co.

R. D. Gidel
Nat. Safety Council

Lee M. Bauer
Forum Chairman

Participants in Industrial Relations Forum

men from these reports, particularly in regard to their ability to observe."

But the technological aspect of manufacturing has been over-emphasized, Mr. Nicholson warned, adding, "I believe we are on the threshold of attending more to the moral and spiritual. . . . We are very much behind in this respect. . . . Several of the large American companies have during the last few years brought into their organizations men with special education and know-how to convey to the managers, the superintendents, the foremen and the men in the ranks a better way of communication and human relationship."

Especially in these days of constant development and progress in industry is it vital to maintain good men who are ever aware of the areas in which improvement is needed, the speaker concluded. He pointed out that one great territory that hasn't kept in step with the rest of the industry is the production and utilization of land. "We should grow three to four times the number of trees or pounds of fiber per year and acre that we do at the present time," Mr. Nicholson declared. He pointed to the tremendous development of the wood-using industries in the South as an example of far-sighted practices in wood utilization. Nearly half of the total pulp production in the U. S., he said, is now below the Mason-Dixon line, and just about half of all the lumber. It is in that area that the big progress is going to take place. And with such future possibilities—not in the South alone, but in all paper manufacturing regions—it is a necessity that associations such as the Superintendents and Tappi maintain their good work in helping the men who have the responsibility of development to learn the latest and best methods of improving both the technological and spiritual.

A personal impression

That there is a great need for the continuation and expansion of association work in the industry was stressed by Mr. Gayner as he opened his address at the "Pay-Off." Without such a movement, he declared, "there would be a great gap in the work of the industry."

Congratulating the Superintendents for their influence on the production of more and better paper, Mr. Gayner emphasized the importance of divisional meetings. "They have been outstanding," he continued. "You have put on good programs with top people presenting the papers; you have had good attendance at each of these meetings, and the men have come back from those meeting to their respective plants with some real meat to report. That is a real accomplishment, and one in which you should take a very great deal of pride."

"We are entering a competitive era in this industry," he declared in pointing out the ever-increasing importance of good associations with good leadership. "In fact, we are not entering it; we are in it. The war is over. So far as industry's competition or lack of it is concerned, costs are a real factor. Progress, improvement, all of those things are again real factors in our plants and companies. . . . The Superintendents Association with its great importance to our industry deserves to be fully, completely, and without reservation, supported by all of the pulp and paper industry. You can warrant this support. Knowing all of you and the type of people you are, I know you will do it."

During the convention it was determined that the 1954 meeting will be held at the Mount Royal Hotel, Montreal, June 21-23. This will be the second time in the history of the Superintendents Association that a national gathering will have been staged in Canada. In 1938 the scene of the convention was the Royal York Hotel, Toronto.

Wehr elected vice president

H. E. Wehr, manager for the Mead Corp. at Harriman, Tenn., became the Association's new fifth vice president at the annual election of officers. Others in addition to Mr. Wehr and Mr. Dick are: Harry E. Hadley, Gardner Board & Carton Co., first vice president; Howard H. Street, National Vulcanized Fibre Co., second vice president; Martin J. Auchter, Hoberg Paper Mills, third vice president, and A. E. Bachmann, Missisquoi Corp., fourth vice president. Harry E. Weston continues as secretary and treasurer.

Roy H. Kelly, resident manager for Marathon Corp. at Rothschild, Wis., was elected a trustee in place of Fred C. Boyce, who is now president emeritus. William H. Brydges and Raymond L. Barton with Mr. Kelly comprise the full board of trustees.

Morden heads affiliates

It was announced at the annual Industrial Affiliates Recognition Dinner that R. Burke Morden, president of Morden Machines Co., has been elected president of the Affiliates. He succeeds Walter B. Morehouse of Nopco Chemical Co. First vice chairman of the group is O. W. Callighan of Edgar Bros. Co., Metuchen, N.J.

Since the 1952 convention in Detroit 12 new firms have joined the Association as industrial affiliates: Allis-Chalmers Mfg. Co., Milwaukee; American Shear Knife Co., Homestead, Pa.; Chemical Linings Inc., Watertown, N. Y.; The Cincinnati Rubber Mfg. Co., Cincinnati; C. B. Cottrell & Sons Co., Westerly, R. I.; Darling & Co., Chicago; The Garlock Packing Co., Palmyra, N. Y.; The Hubinger Co., Keokuk, Iowa; Koppers Co., Inc., Metal Products Division, Baltimore; Philadelphia Felt Co., Frankford, Pa.; the Thew Shovel Co., Lorain, Ohio, and Warren Steam Pump Co.

Technical sessions

One day of the convention was devoted to technical sessions at which papers were presented by authorities in the following fields: Paperboard, engineering and maintenance, kraft, sulfite, high-yield pulping, and converting. Those participating in the meetings, together with their topics of discussion, were as follows:

Paperboard—Chairman, L. B. Chamberlain, Container Corp. of America, Wabash, Ind.; co-chairman, Frank Sanger, The Pusey & Jones Corp., Wilmington, Del. Participants: Charles A. Shoudy and John A. Hoover, West Virginia Pulp & Paper Co., "High-Speed Fourdrinier Board;" George Ehman, Ohio Boxboard Co., "Process Control and Instrumentation;" Howard Breyfogle, Alton Box Board Co., "High-

Speed Liner Board," and Harry E. Hadley, Gardner Board & Carton Co., "Paperboard Mill Operating Problems."

Engineering and Maintenance — Chairman, John A. McPherson, Mosinee Paper Mills Co., Mosinee, Wis.; co-chairman, J. M. Wilcox, Electric Steel Foundry Co., Portland, Ore. Participants: Malcolm Pineo, Brunswick Pulp & Paper Co., "Before Placing the Order for Machinery;" G. L. Oscarson, Electric Machinery Mfg. Co., "Recent Field Tests on Variable Speed Drive for Fan Pumps;" W. C. Atkin, Dowell Inc., "Chemical Cleaning in Pulp and Paper Mills;" David Whitehead, West Virginia Pulp & Paper Co., "Application and Design of Rubber Belt Conveyor for Handling Pulpwood," and A. O. Mortenson, St. Regis Paper Co., "Planning and Scheduling Repair, Maintenance and Construction Work."

Kraft Pulp and Paper—Chairman, Tom S. Coldewey, St. Joe Paper Co., Port St. Joe, Fla.; co-chairman, George Witham, Orr Felt & Blanket Co., Piqua, Ohio. Participants: James E. Hall, Champion Paper & Fibre Co., "Fine Papers From Bleached Kraft;" Dr. Wilson F. Brown, University of Florida, "Quick-Cook Method of Alkaline Pulping," and Karl Guest, National Container Corp., "Kraft Mill Operating Problems."

Sulfite Pulp and Paper—Chairman, Walter A. Sherman, Flambeau Paper Division, Kansas City Star Co., Park Falls, Wis.; co-chairman, A. A. Nyitray, Eastwood-Nealley Corp., Belleville, N.J. Participants: John Hanson, Badger Paper Mills, "Is the Pending of Spent Sulfite Liquor the Answer to the Pollution Problem?" Arthur L. Landesman, Fischer & Porter Co., "Flow Measurement and Control in the Pulp and Paper Mill;" Gordon J. Chalmers, Ross Engineering of Canada Ltd., "New Totally-Enclosed Hood for Paper Machines," and C. C. Parvin, Nekoosa-Edwards Paper Co., "Elimination of Foam on Paper Machine Wet End."

High-Yield Pulping—Chairman, L. W. Murtfeldt, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis.; co-chairman, C. K. Texter, Bauer Bros. Co., Springfield, Ohio. (The session consisted of a seminar on "Problems of Semichemical Pulp Mills.")

Converting—Chairman, C. D. Coffman, Chesapeake Paper Board Co., Baltimore, Md.; co-chairman, A. William Riedel, Gus Riedel & Son, Kalamazoo. Participants: A. William Riedel, Gus Riedel & Son, "Care of Coating and Dampening Brushes;" James Lyon, Atlas Boxmakers Inc., "Adhesives for Paper, Film and Foil Laminations," and Myron W. Block, Stone Container Corp., "Some Liner Board Problems."

Pacific Tappi Elects

Fred J. Weleber, chief chemist for Publishers' Paper Co. at Oregon City, Ore., has been elected chairman of the Pacific Section of Tappi. Other 1953-54 officers elected during the section's two-day meeting May 22 and 23 were: E. H. Nunn, technical supervisor for Crown Zellerbach Corp. at West Linn, vice chairman, and H. B. Petersen of Hercules Powder Co. at Portland, secretary and treasurer. About 400 persons attended the meeting, which was a joint gathering with the Pacific Coast Division of the Superintendents Association.

One of the highlights at the opening session was an address by Don Osborne on "What Can be Done to Improve Our Key People." Mr. Osborne is training director for C-Z at West Linn. The speaker pointed out that top-flight administrative personnel is one of the biggest problems of mills and other large concerns. He outlined Crown Zellerbach's program of in-company training, and the theme was developed further in a panel discussion period by Harold Fretz of Rayonier Inc. and Mel Parker, training director of Aluminum Co. of America.

Guest speaker at the May 22 luncheon was Edward W. Smith, former president of the Portland Chamber of Commerce, who discussed the need for national unity and a full industrial effort behind the United States' struggle against communism.

Miami Valley Supts. Hold Election Meeting

The annual election of officers of the Miami Valley Division of the Superintendents Association was held June 5 at Piqua, Ohio. 1953-54 chairman is George Lydick of Beckett Paper Co. Dean Newell of Philip Carey Mfg. Co. is first vice chairman, and Robert O. Stevenson of The Champion Paper & Fibre Co. is second vice chairman.

The annual presentation of the Charles Ludwig Memorial Trophy for the low net golfer participating in the tournament went to J. W. Noll of Munroe Falls Paper Co. Mr. Ludwig, in whose honor the prize is given, was a former member of the division. At the time of his death he had been associated with The Mead Corp. 46 years. Host at the golf outing was Orr Felt & Blanket Co. of Piqua.

Storin Named to Head Western N. Y. Tappi

Gordon K. Storin of Niagara Alkali Co. has been reelected chairman of the Western New York Section of Empire State Tappi. The new vice chairman is James J. Forsythe of International Paper Co.

Other officers include Fred P. Heil of Lockport Felt Co., secretary; E. F. Andrews of International Paper, treasurer; Paul U. Bretschger of Buffalo Electrochemical Co., program chairman; Caleb Taft of International Paper, vice program chairman; Donald M. Hart, publicity chairman; Francis H. Webster and M. S. Thomson, vice publicity chairmen. Messrs. Hart, Webster and Thomson are associated with Moore Business Forms Inc.

Chairman of the arrangements committee is George Norton of George Irish Paper Co.; Claire Walworth of Carborundum Co. is vice chairman. Irving Earle of Upson Co. heads the attendance committee, while Ward Arnold of International Paper is vice chairman. The membership committee is headed by Fred Shelder of Buffalo Electrochemical, with the following committee members: Bob Zinsmeister, Kimberly-Clark Corp.; Edgar Miller, Carborundum, and Leroy Lindberg of Robert Gair Co. Inc.

Coming Events

TAPPI meetings

Oct. 8-9—Tenth Fibrous Agricultural Residues Conference, Trenton, Ont.

Oct. 15-16—Third Corrugated Containers Conference, Statler Hotel, New York, N. Y.

Oct. 26-29—Eighth Engineering Conference, Sheraton-Mount Royal Hotel, Montreal.

Nov. 18-20—Seventh Alkaline Pulping Conference, Rice Hotel, Houston, Texas.

Feb. 15-18—39th Annual Meeting, Commodore Hotel, New York, N. Y.

American Pulp & Paper Mill Superintendent Association meetings

Sept. 11-12—Northwestern Division, Hotel Wausau, Wausau, Wis.

Sept. 17-19—New York-Canadian Division, The Alpine Inn, St. Marguerite, Que.

Sept. 17-19—Northeastern Division, Poland Spring House, Poland Spring, Maine.

Oct. 23-24—Pennsylvania-New Jersey-Delaware Division, Pocono Manor, Pocono Manor, Pa.

Oct. 28-30—Southern and Southeastern Divisions (joint meeting), Edgewater Gulf Hotel, Edgewater Park, Miss.

Other meetings

Sept. 13-16—The Electrochemical Society, Ocean Terrace Hotel, Wrightsville Beach, N. C.

Oct. 3—Pacific Coast Branch, Technical Section, CPPA, Devonshire Hotel, Vancouver, B. C.

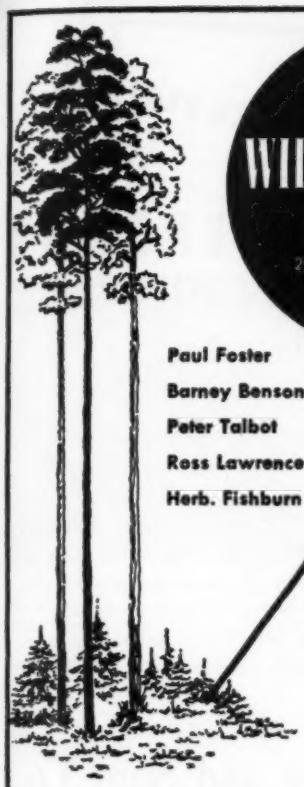
Oct. 6-7—Fibrebox Association, fall meeting, Waldorf-Astoria Hotel, New York, N. Y.

Oct. 19-23—National Safety Congress, Pulp and Paper Section, Conrad Hilton Hotel, Chicago.

Oct. 27—Association of Consulting Chemists and Chemical Engineers, Hotel Belmont Plaza, New York, N. Y.

Nov. 4-6—National Paperboard Association, annual meeting, Waldorf-Astoria Hotel, New York, N. Y.

Dec. 13-16—American Institute of Chemical Engineers, annual meeting, Hotel Jefferson, St. Louis, Mo.



WILLIAMS-GRAY COMPANY

221 North La Salle Street

Chicago 1, Illinois

Paul Foster

Barney Benson

Peter Talbot

Ross Lawrence

Herb. Fishburn

Lindsay & Niagara Wires

Knox "Excelsior" Felts

Siamese & Richland Dryer Felts

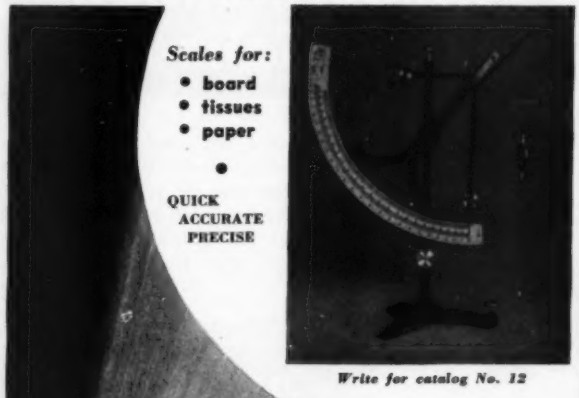
Carrier Rope

Splicing Tissues

Deckle Webbing

TMI ● TMI ● TMI ● TMI ● TMI ● TMI ● TMI ● TMI

STANDARD DESK PAPER SCALES



Scales for:

- board
- tissues
- paper

QUICK ACCURATE PRECISE

Write for catalog No. 12

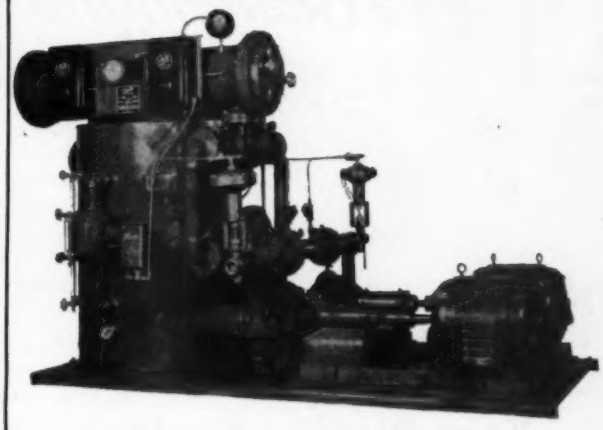
The Spotlight is on

TESTING MACHINES, INC.

manufacturers and distributors of the finest test equipment for the paper, textiles, plastics, metals industries and laboratories.

123 WEST 64TH STREET · NEW YORK 23, N.Y.

Italian Paper Mill to Install Another Stickle Drainage System



The great Cartiere Burgo paper mills of Italy are installing another Stickle vacuum differential drainage system, with Stickle automatic control. Realizing that a breakdown of American equipment would cause long and costly delays, Cartiere Burgo executives specified the dependable Stickle system which has already proved its value at these famous mills. Main unit of the Stickle vacuum differential drainage system is the Stickle vacuum pump, illustrated above. This pump offers these big advantages:

1. Higher efficiency—The Stickle vacuum pump keeps dryers free of condensate and air, returns condensate to boiler room at higher temperature.
2. Fewer failures—The Stickle vacuum pump is designed for paper mill operation where exterior temperatures and humidity are extremely high. Duplex model has duplicate pumps, motors, controls to prevent costly interruptions in case of emergency.
3. Lower cost—The Stickle vacuum pump shortens heat-up period. Built-in heat exchanger eliminates costly cooling equipment and need for adding raw water to condensate return. Standard pumps and motors are easy and inexpensive to replace.
4. Greater flexibility—The Stickle vacuum pump permits 25% pump capacity increase at small cost. Drying pressure changes may be handled automatically.

The Stickle vacuum pump will handle vacuums up to 28" with 90° condensate. Available in single and duplex models—each in ten sizes. Capacities for Single model up to: 150 GPM (water) and 145 CFM (air), or 450 GPM (water only). With Duplex model, these capacities are doubled. Every Stickle installation is guaranteed. Write for free bulletin—No. 260.

Stickle Steam Specialties Company

2215 Valley Avenue • Indianapolis 18, Indiana

Enter—
a Searchlight
—dressed in a business suit

Your Dicalite Engineer can bring light into your processing problems

While your Dicalite Engineer may be somewhat surprised at being called a searchlight, that is his job, essentially — to throw light on operating difficulties and clear them away. His intimate, detailed knowledge of diatomaceous materials and his wide experience in their applications will often solve an operating problem quickly. But, if necessary, he'll spend days working with you and your operators, ironing out difficulties or perhaps, aiding you in working out details for a projected new process.

Whether your problems involve filtration, fillers or any other use of diatomaceous silica, his expert services are always at your call. For extremely complex problems, you can call on the services of the fully-equipped Dicalite laboratories, who will spend weeks if necessary to get you the right answer.

Our crowded files of years past show how great the value of Dicalite Engineering Service is—to you and to us, also. For we are as interested as you in seeing to it that, when you get Dicalite, you get the *results* you want!

Dependable GREAT LAKES **Dicalite®** DIATOMACEOUS MATERIALS

DICALITE DIVISION, GREAT LAKES CARBON CORPORATION
NEW YORK 17 • CHICAGO 1 • LOS ANGELES 17

Oriskany

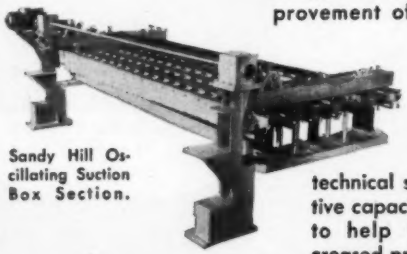
WATERBURY FELTS

Quality control is important in paper-making . . . and it's equally important in felt-making, too. That's why you'll find Oriskany Waterbury Felts doing such an outstanding job in many of the finest paper mills in the country. Every Oriskany Felt passes rigid inspections from raw wool processing to finished felt . . . your assurance that you're getting the best that constant research and technical skill can produce.

H. Waterbury and Sons Co.
Oriskany, New York

Modernization for Specialization

SANDY HILL is ready and equipped to serve you, whether your individual requirement is a new paper machine for a highly specialized purpose or the installation of new facilities for the improvement of existing mills.



Sandy Hill Oscillating Suction Box Section.

Whatever your problem may be, Sandy Hill's technical skill and productive capacity are available to help you attain increased production of high quality paper, economically and profitably.

Consult us at any time, on any problem, without obligation.

The *Sandy Hill*
IRON & BRASS WORKS
PAPER MACHINERY SPECIALISTS • HUDSON FALLS, N. Y.

Associated with Canadian Vickers, Ltd., Montreal, Builders of Sandy Hill Designed Machinery in Canada

The Paper Industry Names in the News

HONORARY DEGREE is awarded to D. Clark Everest (center) at University of Wisconsin graduation ceremonies; shown are University President E. B. Fred (left) and Professors Ben G. Elliott and L. F. Graber

D. C. Everest Given Honorary Degree

D. CLARK EVEREST, chairman of the board of Marathon Corp. and one of the organizers of Tappi and the Institute of Paper Chemistry, was among the five distinguished Americans who received honorary degrees at the 100th commencement of the University of Wisconsin at Madison in June.

A native of Michigan, Mr. Everest came to Wisconsin in 1909 as general manager of the newly organized Marathon Corp. at Rothschild. He twice served as president of APPA and is the only non-technician ever to receive the Tappi Gold Medal. An ex-president of the American Forestry Association, he has sponsored the "Trees for Tomorrow" program that is working to restore the great forests of northern Wisconsin. Mr. Everest is currently president of the Wisconsin Historical Society.

In conferring the degree, E. B. Fred, president of the university, declared, "Because you are the architect of one of Wisconsin's great industrial organizations; because you are known throughout the world for your genius in corporate administration; because you are an extremely effective pioneer in the conservation of our natural resources; and because you have served your community and your country with conscientious zeal and devotion, I am happy to confer upon you the honorary degree of Doctor of Laws."

Three Paper Executives Named to College Board

Three paper industry executives have been named to the board of trustees of Lawrence College, Appleton, Wis. They are *STANTON W. MEAD*, president of Consolidated Water Power & Paper Co.; *JOHN REEVE*, vice president, assistant treasurer and mill manager of Appleton Coated Paper Co., and *DAN H. HARDT*, sales manager for Neenah Paper Co.

AT CONCLUSION of Lawrence College commencement, Alexander Calder, president of Union Bag & Paper Corp. and recipient of honorary degree, joins Ernst Mahler (left) former executive vice president of Kimberly-Clark Corp., and Nathan Pusey, then Lawrence president; Mr. Mahler presented Mr. Calder for his degree

The college at its commencement exercises June 7 conferred an honorary doctor of laws degree on *ALEXANDER CALDER*, president of Union Bag & Paper Corp. Mr. Calder, who has served on the board of the Institute of Paper Chemistry, was honored for his contributions toward the advancement of forestry, and economic and chemical research.

Rhinelander Technical Director Receives Steele Medal

DR. WILLIAM R. HASELTON, who was graduated from The Institute of Paper Chemistry in Appleton, Wis., June 14, has been announced as the recipient of the Westbrook Steele gold medal. He is technical director at Rhinelander Paper Co.

The award, established in 1941 by Mr. Steele, president of the Institute, is presented annually by vote of the faculty to the graduate whose doctoral thesis is most outstanding. Dr. Haselton received his Ph.D. at the commencement.

A native of South Glens Falls, N.Y., the award winner received his B.Ch.E. degree from Rensselaer Polytechnic Institute in 1949 and his M.S. degree from Lawrence College (the Institute) in 1951. His doctoral thesis was on the topic, "An Investigation of the Adsorption of Gases by Wood and Its Components and of Gas Adsorption Techniques as a Means of Studying the Area and Structure of Pulp and Paper." Upon completion of his graduate study at the Institute last February, Dr. Haselton joined the Rhinelander staff.

To receive the Steele award, a student's thesis "must show evidence of understanding of the relationship of the subject of investigation to the broader problems of pulp and papermaking, originality, and soundness of approach to the subject, ingenuity of techniques and thoroughness of investigation, and craftsmanship in preparation and presentation of the thesis."

Scofield Gets Rayonier Post

The appointment of *GEORGE E. SCOFIELD* as assistant resident manager of the Jesup (Ga.) Division of Rayonier Inc. has been announced by W. E. Breitenbach, vice president in charge of manufacturing. He will continue to serve as assistant resident manager of the Fernandina Division until shortly before the new Jesup mill goes into production early next year.

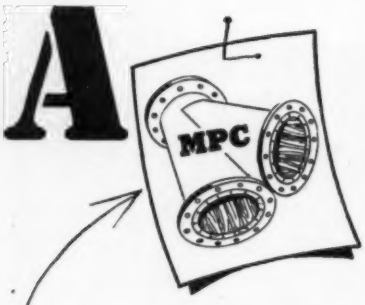
Appointed assistant resident manager at Fernandina in April 1952 after having been chief chemist seven years, Mr. Scofield joined the firm at the Grays Harbor Division in Hoquiam, Wash., in 1937. He was transferred to Fernandina in 1940. He is a chemical engineering graduate of the University of Washington.

H. L. Rauch Made Board Chairman at Consolidated

Top officials of Consolidated Paper Co. at Monroe, Mich., have moved up a notch as the result of the appointment of *H. LEE RAUCH* as chairman of the board of directors. He had been president and general manager 15 years. Mr. Rauch's successor as president is *ALBERT H. LOCKWOOD*, who has

Q *what pipe is especially designed to lick the corrosion problem?*

A



WOOD-LINED STEEL PIPE

It's as simple as this:

. . . if your piping problem is corrosion, abrasion, frictional resistance or sliming

. . . if you're looking for a dependable, efficient and economical answer to this problem

then specify MPC WOOD-LINED STEEL PIPE, the pipe that combines the strength of steel with the durability of wood!

For service up to 180°F and 250 P.S.I. Higher pressure ratings for special service requirements. All pipe flanged and available in 10' and 20' standard lengths, or "tailor-made" to your specifications. Easily cut and reflanged; all flanges have standard ASME bolt circles.

Wood-lined fittings are available in standard and special designs for all diameters. For catalog and additional information, write Dept. P.I.

It's as easy as MPC
to lick your pipe corrosion problem!

mpc
MICHIGAN PIPE COMPANY
Bay City • Michigan
Manufacturers of Wood-Stave, Saran Rubber-Lined, Stainless Steel and Monel Piping. Represented nationally by Saran Lined Pipe Co., Detroit, (Ferndale) Michigan.

been a plant manager since 1921. Mr. Lockwood will also serve as treasurer.

CLEMENT Q. BARON, formerly secretary and assistant general manager, becomes executive vice president and general manager; *RALPH J. SCHEIDINGER,* formerly a vice president, becomes secretary, and *C. HARRY R. JOHNSON,* who has been vice president and general manager, becomes vice president in charge of manufacturing.

Other recent changes at Consolidated include: *STANLEY J. NEWCOMER,* to be vice president and general sales manager; *J. B. TAFT,* vice president in charge of board sales, and *FRANKLIN H. BOCK,* assistant secretary and assistant treasurer.

J. N. Stephenson Honored

J. N. STEPHENSON, editor-in-chief of *Pulp and Paper Magazine of Canada,* was recently honored on the occasion of his 35th anniversary as editor of the four-volume textbook "Pulp and Paper Manufacture." At a surprise luncheon attended by leaders of the industry, he was presented a silver tray in recognition of his service. The presentation was made by Dr. John S. Bates, first chairman of the Technical Section of CPPA. Other speakers included Arthur L. Dawe, vice president of Consolidated Paper Sales Ltd.; J. J. Harpell, former publisher of *Pulp and Paper Magazine of Canada;* R. W. Hovey, vice president of Oxford Paper Sales Co. of New York, N.Y., and George Hobart, president of Consolidated Paper Corp.

G. S. Douglas

E. G. Bennett

Mead Names Douglas Head of Michigan Division

The Mead Corp., Chillicothe, Ohio, has named *GEORGE S. DOUGLAS* division manager of its operations in Escanaba, Mich. He will assume responsibility for all manufacturing operations of Mead's Michigan Division. *E. G. BENNETT* continues as president of the two firms that comprise the division, Escanaba Paper Co. and Upper Michigan Power & Light Co.

Mr. Douglas has been with Mead since he joined the development department as an engineer in 1937. In 1940 he was appointed manager of the Wheelwright Division in Leominster, Mass.

HONORED FOR 20 years' service to both his government and his industry, H. S. Daniels (left), executive vice president of Union Bag & Paper Corp., receives a testimonial scroll at the June open meeting of the Paper Bag Industry in New York, N. Y.; making the presentation is Wayne Brown, assistant vice president of Crown Zellerbach Corp.

He was promoted to the post of assistant to the executive vice president in 1951. Mr. Douglas was associated with Crown Zellerbach Corp. in Port Angeles, Wash., from 1931 to 1937.

ARDELL PETERSON, special project engineer for Scott Paper Co. at the Chester (Pa.) technical control department, has been promoted to the position of technical control director at the South Glens Falls, N.Y., mill.

EVERETT G. HAM, technical director for John A. Manning Paper Co., Troy, N.Y., has been named as one of the 10 outstanding members of the American Society for Testing Materials to receive a 1953 ASTM Award of Merit.

Dr. F. E. Brauns Tours European Industry

DR. FRIEDRICH E. BRAUNS, research associate in lignin chemistry at the Institute of Paper Chemistry, Appleton, Wis., is spending two months in Europe. On his agenda are addresses before a number of industrial and scientific groups, including the German Pulp and Paper Association and the International Congress of Pure and Applied Chemistry. Dr. Brauns will also examine research activities and manufacturing operations related to the pulp and paper industry abroad.

He planned a conference with Dr. Mörath at the Food and Agricultural Organization of the United Nations at Rome and a tour of the Pomilio pulp plant at Foggia and the Vita Mayer plant in Milan. He will address the staff and students at the French School of Papermaking at Grenoble.

Other stops on Dr. Brauns' itinerary include the artificial silk factory at Freiburg, Germany; the Zellstoff Waldhof at Mannheim, where he will participate

in a lignin discussion; the Cellulose Institute of Darmstadt; mills at Frankfort, Wiesbaden, Augsburg and Dachau, and the University of Innsbrück.

Dr. Brauns plans lectures at the dedication of the Institute of Paper Technology at Graz; the meeting of the German Pulp and Paper Association at Bad Kissingen; the Free University of Berlin, and the 13th International Congress of Pure and Applied Chemistry at Stockholm, Sweden.

J. D. ZELLERBACH, president of Crown Zellerbach Corp., was presented a certificate of honorary citizenship in the city of Camas, Wash., May 13. He was in Camas to attend the 70th anniversary of the founding of the Camas mill.

DELBERT C. MEYER has been named assistant chief engineer for Gardner Board & Carton Co., Middletown, Ohio. He was formerly chief engineer of Shellmar Products Co. and was at one time manager of the engineering department of R. R. Donnelly & Sons.

MAYNARD D. CONKLIN has been named an assistant treasurer of the Champion Paper & Fibre Co., Hamilton, Ohio. Formerly associated with the Fifth Third Union Trust Co. of Cincinnati, Mutual Life of New York and the United States Internal Revenue Department, he has been with Champion as a tax consultant for the past several years.

M. D. Conklin

W. C. MacAdam

W. C. MacAdam Promoted at Champion-International

WILLIAM C. MacADAM has been promoted to the position of assistant treasurer and purchasing agent at Champion-International Paper Co. As a consultant on pulpwood supply, Mr. MacAdam first became associated with the Lawrence, Mass., firm in 1949. He later became pulpwood manager and assistant purchasing agent.

In 1952 Mr. MacAdam was appointed manager of the newly organized woodlands division, with headquarters at Concord, N.H., where he consolidated the company's forestry activities and established new concentration yard and debarking mill facilities at Bow, N.H.

10
NASH VACUUM PUMPS
are simple
One moving part. No valves, no pistons, no timing gears, no internal lubrication. This makes possible important operating advantages no other type pump offers.
Plus—
NASH ENGINEERING COMPANY
414 WILSON AVE., SO. NORWALK, CONN

"THIS LUBRICANT SAVED US $2,098·16 IN SEVEN MONTHS"

—says THE BROWN COMPANY
Quality Paper Makers of Berlin, N. H.

"During a seven-month period before using LUBRIPLATE No. 130-AA in the bearing of our Kraft Mill Lime Kiln, we used a conventional oil at a cost of $2,134.00. In the seven months that followed, we used LUBRIPLATE No. 130-AA for initial filling and replacement at the cost of $35.84."

For nearest LUBRIPLATE distributor, see Classified Telephone Directory. Send for free 56-page "LUBRIPLATE DATA BOOK"...a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

A graduate of the New York State College of Forestry at Syracuse, he was formerly with Great Northern Paper Co. in Maine.

PETER S. PAINE, president of New York & Pennsylvania Co. Inc., has been elected a director of Great Northern Paper Co. He succeeds his brother, the late George Eustis Paine.

JOSEPH M. MAZER, treasurer of Hudson Pulp & Paper Corp., has accepted the general chairmanship of the 1953 Greater New York campaign of the American Friends of the Hebrew University. The goal of the drive is $1,000,000. *GEORGE S. WISE*, president of George S. Wise & Co. and Inter-American Paper Corp., has been elected president of the school's board of governors.

J. M. Mazer

Dr. P. M. Goodloe

DR. PAUL A. GOODLOE has been named assistant director of research and development for Brown Co., Berlin, N.H. At the same time, it was announced that *ROBERT A. WEBBER* has been made department administrator, and that *DOUGLAS H. McMURTRIE* and *HAROLD R. TITUS* have been appointed senior research assistants. Dr. Goodloe has been in charge of the technical service division for Solka-Floc, Brown's finely divided form of alpha-cellulose.

DONALD A. BERTOLETTE is now in charge of quality control at Chesapeake Paper Board Co., Baltimore, Md. In his new capacity he works closely with C. D. Coffman, general superintendent. Mr. Bertolette was formerly in the technical control departments of W. C. Hamilton & Sons Inc. and Glassine Paper Co.

National Gypsum Co. has announced the following changes in its engineering department. *WALTER H. WETZEL*, chief mechanical engineer, will have the additional responsibility of coordinating design and construction work. Special engineering assignments will be handled by *WALTER A. SCHMIDT*. *PETER BADAME* has been promoted to field construction superintendent in charge of all construction work, while *WALTER V. SULKOWSKI* has been named chief draftsman.

WENTWORTH BROWN has been elected vice president and general manager of Columbia Cellulose Co. Ltd. and vice president of Canadian Chemical & Cellulose Co. Ltd., Vancouver, B.C., subsidiaries of Celanese Corp. of America. Mr. Brown resigned October 1 as vice president of the Brown Co., Berlin, N.H., and the Brown Corp. of Canada.

HARRY A. JOHNSON, mill superintendent at Edgewater Paper Co., Neenah, Wis., for 24 years, has been named vice president in charge of production.

GEORGE S. SOYKA has been named technical director of Byron Weston Co. in Dalton, Mass. Mr. Soyka was formerly associated with Fort Orange Paper Co.

FRED C. BOYCE JR., president of Wisconsin Paper & Products Co. of Milwaukee, has been elected a member of the board of directors of D. J. Murray Mfg. Co. of Wausau, Wis.

DWIGHT L. STOCKER, president of Kalamazoo Vegetable Parchment Co., has been elected an associate member of the American Institute of Management.

THOMAS N. CARTER has been made technical assistant to Leo Geiser, director of production for The Champion Paper & Fibre Co. He was formerly with The Bagley & Sewell Co. in an engineering capacity.

JOSEPH B. TALBIRD has been named assistant comptroller of Rayonier Inc. He will coordinate the accounting and office procedures of the firm's three southeastern divisions: the Fernandina Division and the Southeast Timber Division, both at Fernandina Beach, Fla., and the Jesup Division at Jesup, Ga. He was formerly office manager at Fernandina.

J. B. Talbird

H. W. Morgan

Weyerhaeuser Timber Co. has named three new members of the board of directors: *HENRY T. McKNIGHT*, Washington, D.C., advertising execu-

tive; *CARLETON BLUNT*, Chicago attorney, and *C. DAVIS WEYERHAEUSER*, manager of forestry, lands and timber activities for WTC. Also, *HOWARD W. MORGAN* of Tacoma, manager of the firm's pulp division since 1946, was named a vice president.

C. B. DAVIES, formerly with E. B. Eddy Co. at Hull, Que., is now manager of Irving Pulp & Paper Ltd., Lancaster, N.B. He was at one time associated with Manitoba Paper Co. Mr. Davies is chairman of the New York-Canadian Division of the Superintendents Association.

COLA G. PARKER, president of Kimberly-Clark Corp., has been elected chairman of the National Industrial Conference Board, a private fact-finding group for business and industry.

ROBERT S. ROSENFELD has been named vice president of National Container Corp. of Pennsylvania, wholly owned subsidiary of National Container Corp. He has been in charge of the Philadelphia corrugated paper shipping box plant since 1947.

GEN. LUCIUS D. CLAY, chairman of the board and chief executive officer of Continental Can Co. since April 1950, has been elected to the board of directors of Metropolitan Life Insurance Co.

ROBERT E. VAN ROSEN, formerly carton design engineer for Robert Gair Co. Inc., has opened his own packaging consultant service at 34 West 58th Street, New York, N.Y.

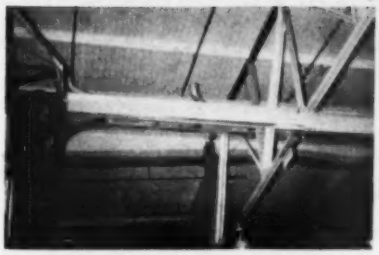
AUBREY CRABTREE, president and general manager of Fraser Companies Ltd., received an honorary doctor of laws degree from the University of New Brunswick May 14.

HARRY NEWTON, president of American Paper Co., Milwaukee, has been elected a director of the National Paper Trade Association.

DAVID B. SMITH, president of Wausau Paper Mills Co. at Brokaw, Wis., has been named a director of the Wisconsin Manufacturers Association.

CLIFFORD C. VATTER SR., president of Bradley & Gilbert Co., Louisville, Ky., is the new president of the National Paper Box Association. He has been vice president for the past two years.

DR. J. EDWARD LYNN has been appointed director of basic research for National Gypsum Co. He was formerly director of the textile chemicals laboratory of American Cyanamid Co.



Wolmanized paper machine room roof deck at Wisconsin Rapids. 15 years old, this roof deck is still in like-new condition.

Wolmanized stock chest, platform, stairs and rail built in 1933. This installation is still in good condition and daily service.

View of the base of one of two vomit stacks and roof deck of blow pit building. Wisconsin Rapids plant, over 15 years ago.

Consolidated's Wisconsin Rapids, Wisc., plant used long-lasting Wolmanized Douglas Fir for machine room roof decking.

How Wolmanized* Pressure-Treated Lumber serves a wet process industry

Consolidated Water Power and Paper Co., Wisconsin Rapids, Wisc., is very conscious of water's softening effect on untreated wood. In a wet process such as theirs, ordinary untreated lumber would soften in a matter of months. Therefore, Consolidated selected Wolmanized pressure-treated lumber for a variety of applications in their plants at Wisconsin Rapids, Biron, and Appleton, Wisc.

The illustrations show how Consolidated used Wolmanized pressure-treated lumber throughout its plants back in 1938. Machinery room roof decks, vomit stacks, stock chests, blow pit roof decks, platforms, are only a few of the uses to which Wolmanized lumber was put. The fact that these installations are still in service after fifteen years' exposure to water, dampness, and moisture testifies to the lasting rot and decay resistant qualities of Wolmanized pressure-treated lumber.

Wolmanized pressure-treated lumber, besides giving protection against rot and decay, is clean, nonoily, odorless, completely paintable, and noncorrosive to metal fittings. Since Wolman* preservative solutions are driven deep into the fibers of the wood by high pressures, and not just brushed on or soaked in, the protection afforded by Wolmanized lumber lasts many times longer.

Wolmanized lumber is completely available with preservative plants and warehouses located throughout the entire country. Learn how you can protect the investment you make in wood structures. Write to:

*Reg. U. S. Pat. Off.

American Lumber & Treating Co.

GENERAL OFFICES:
1601 McCORMICK BLDG.
CHICAGO 4, ILLINOIS

Offices: Little Rock, Arkansas • Boston Portland, Oregon • Los Angeles Seattle • Baltimore • New York Jacksonville, Florida • San Francisco

PRODUCERS OF THE ORIGINAL

Wolmanized

PRESSURE TREATED

Lumber

The Paper Industry Necrology

Fred C. Boyce

The "Daddy of the Superintendents Association," *Fred C. Boyce* died June 28 at a Milwaukee Hospital. He was 84.

Recently elected chairman of the board of D. J. Murray Mfg. Co., Mr. Boyce had long been well known throughout the paper industry. He was president of the Superintendents from 1919 to 1921 and had been active in the organization since that time, having been a trustee for many years. He was named president emeritus at the Atlanta convention in June.

A native of New York State, Mr. Boyce was superintendent of Falls Mfg. Co. in Oconto Falls, Wis., from 1901 to 1904. He later joined Wausau Paper Mills in Wausau and served as superintendent and production manager of that firm for 31 years. Mr. Boyce retired from active employment in 1932 and made his home in Wauwatosa. However, he continued as president of both Wisconsin Paper & Products Co., Milwaukee, and D. J. Murray.

Fred C. Boyce

Grover Keeth

Grover Keeth

Grover Keeth, 68, widely known power engineer in the paper industry, died June 26 at a Wausau, Wis., hospital. He was chief power engineer for Marathon Corp. at Rothschild.

A past president (1942-43) and life member of the American Pulp and Paper Mill Superintendents Association, he was consultant for Ontonagon Fibre Corp. and had held a similar position with Tomahawk Kraft Paper Co.

Mr. Keeth was a native of Ohio and was a 1906 graduate of Armour Institute of Technology in Chicago. Upon receiving his master's degree in 1910, he joined the engineering staff of Marathon.

Prominent in the paper industry for many years, Mr. Keeth was a fellow and life member of the American Society of Mechanical Engineers and a member of the American Chemical Society, the National Society of Professional Engineers, and the Engineers Society of Milwaukee. He was a director of D. J. Murray Mfg. Co. and the Wisconsin Valley Improvement Co.

Franz Rosebush

Funeral services were held June 6 in Wisconsin Rapids, Wis., for *Franz Rosebush,* 73, for many years associated with Nekoosa-Edwards Paper Co. He died June 1 at the home of a son in Atlanta, Ga.

Mr. Rosebush was born in Alfred, N. Y., and was graduated from Alfred University. He was a teacher and high school principal before joining Nekoosa-Edwards in 1917. Mr. Rosebush held various positions in the mill before assuming the task of establishing a department of industrial relations for the firm. He served as director of the department for many years, retiring in January 1949.

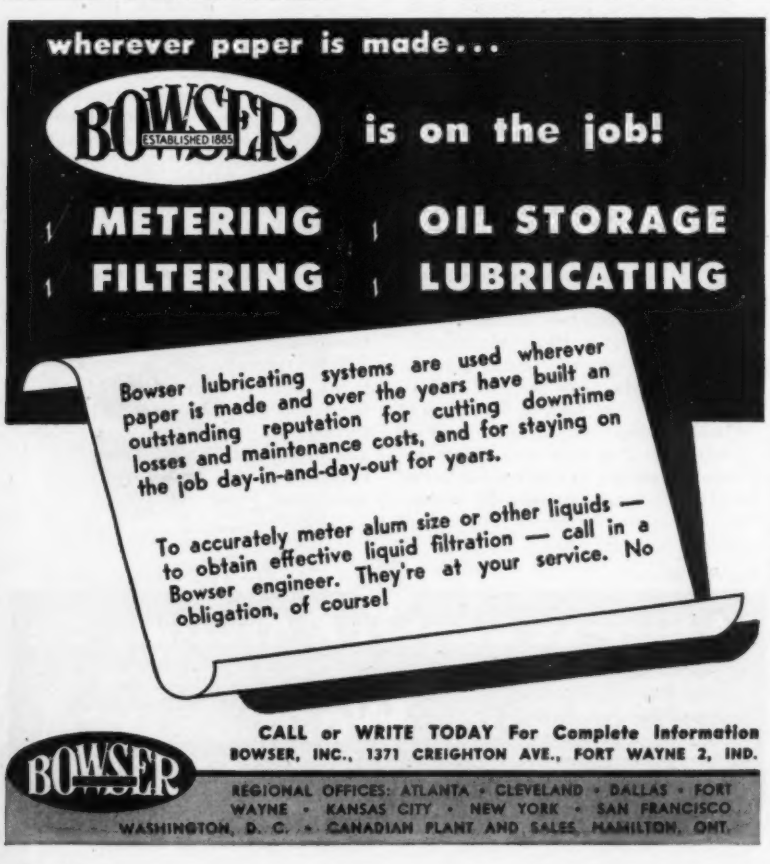
Always interested in the personal safety of mill workers, Mr. Rosebush pioneered in accident prevention work at the Nepco mills and was active in the affairs of the National Safety Council and numerous other industrial safety organizations.

Sumner Simpson, 79, board chairman of Raybestos-Manhattan Inc., died June 13 at Bridgeport, Conn. With Raybestos for many years, he was influential in the merger that created Raybestos-Manhattan and was president until a few years ago, when he became chairman of the board.

Clifford C. Wenzel, personnel director of the northern New York mills of St. Regis Paper Co. since 1941, died June 15 in Watertown. He was 55.

A. M. Haskins, 63, who was in charge of mill scheduling, orders and shipping for Neenah Paper Co., died June 8. He had been with the firm 43 years.

A. Sidney Burruss Jr., 44, a director and secretary-treasurer of National Vulcanized Fibre Co. of Wilmington, Del., died May 10.


wherever paper is made...
BOWSER
ESTABLISHED 1885
is on the job!
METERING
FILTERING
OIL STORAGE
LUBRICATING
Bowser lubricating systems are used wherever paper is made and over the years have built an outstanding reputation for cutting downtime losses and maintenance costs, and for staying on the job day-in-and-day-out for years.
To accurately meter alum size or other liquids — to obtain effective liquid filtration — call in a Bowser engineer. They're at your service. No obligation, of course!
CALL or WRITE TODAY For Complete Information
BOWSER, INC., 1371 CREIGHTON AVE., FORT WAYNE 2, IND.
BOWSER
REGIONAL OFFICES: ATLANTA • CLEVELAND • DALLAS • FORT WAYNE • KANSAS CITY • NEW YORK • SAN FRANCISCO • WASHINGTON, D. C. • CANADIAN PLANT AND SALES, HAMILTON, ONT.

The Paper Industry Safety News

Consolidated Smashes Safety Record for Newsprint Mills

The Wayagamack Division of Consolidated Paper Corp. Ltd. at Three Rivers, Que., has broken the long-standing safety record for newsprint mills. On May 6 the 1,235 employees of the division completed 3,197,801 man-hours without a lost-time or disabling injury. This betters the 3,061,526 man-hours set in 1935 by St. Croix Paper Co., Woodland, Maine, and recognized by the National Safety Council as the record for mills manufacturing newsprint.

To celebrate the achievement, Consolidated staged a program for 4,000 employees and guests at the Three Rivers Coloseum. Principal speaker was Maurice Duplissis, premier of Quebec. Also present were George Hobart, president of Consolidated, and Frank Pater, NSC staff representative. Julius A. Draper is director of safety for Consolidated.

D. C. Everest to Keynote Pulp and Paper Section at 41st National Congress

"Forty Years Progress in Safety" will be the keynote address at the National Safety Congress' Pulp and Paper Section, which is to be held October 19-23 at the Conrad Hilton Hotel in Chicago. The speaker will be D. C. Everest, chairman of the board of Marathon Corp., Rothschild, Wis. His address will be heard at the opening session Monday afternoon, October 19.

Another feature of the initial meeting will be the presentation of the Edward Benton Fritz Trophy, which is given annually to the mill having the most outstanding safety record for the previous year. In charge of the ceremony will be A. Scott Dowd, publisher of THE PAPER INDUSTRY, donor of the trophy.

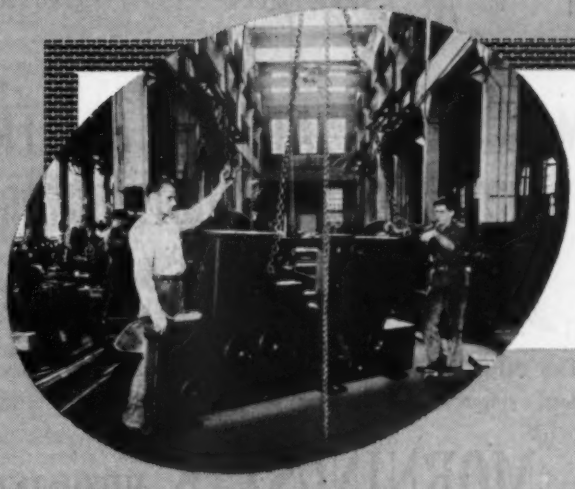
The meeting will be opened by the annual progress report of the general chairman, A. E. Minor, safety supervisor for The Ontario-Minnesota Pulp & Paper Co., Kenora, Ont. This will be followed by the report of the nominating committee, of which J. Fred Berry of Alton Box Board Co. is chairman, and the election of 1953-54 officers.

Three speakers will be heard at a general conference Tuesday afternoon. "What an Hourly Worker Expects of a Safety Program" will be the topic of Elmer Collar, an hourly worker in the Neenah (Wis.) mill of Kimberly-Clark Corp. Earl D. Hargis, pulp mill tour foreman for International Paper Co. at Bastrop, La., will speak on the subject, "What a Foreman Expects of a Safety Program"; while Donald O. Collins, assistant superintendent of the No. 1 paper mill of The Mead Corp. at Chillicothe, Ohio, will close the program with a discussion of "What a Superintendent Expects of a Safety Program."

Discussion sessions

Wednesday and Thursday afternoons, October 21 and 22, will be devoted to discussions of the technical aspects of safety in pulp and paper mills. Presiding at the *Sulfite Pulp Manufacturing* session will be D. V. Hill, safety director for The Mead Corp. at Kingsport, Tenn.; assignment of the conference re-

"From ingot to fourdrinier wire"



HAIRSPRING ACCURACY — BRIDGE-BEAM SIZE

Our machine shop doesn't make hairsprings or bridge beams, but our maintenance and construction operations demand equal versatility from our men and machines. Hub of an integrated operation such as ours, its skilled personnel are ready to machine a part to a fraction of a thousandth of an inch, on a tiny instrument part or a huge loom frame.

Because our plant is *completely integrated*, every wire we ship has undergone thorough and continual analysis, control and testing from the raw metals to your finished fourdrinier wire ready for quality paper production.

We are proud to say they are *truly ours* — "from ingot to fourdrinier wire."

EASTWOOD-NEALLEY CORPORATION
Belleville, N. J.

corder has not been confirmed. F. O. Soughton, services and safety supervisor at LongLac Pulp & Paper Co. Ltd. in Terrace Bay, Ont., will preside at the *Sulfate Pulp Manufacturing* round table, with Marion L. Hodges, safety director for West Virginia Pulp & Paper Co. at North Charleston, N.C., acting as recorder.

The *Paper Manufacturing* discussion will be led by C. R. Johnston, personnel director for Cornell Paperboard Products Co. at Cornell, Wis.; the recorder will be James N. Conaway, safety manager for Scott Paper Co., Chester, Pa. Vincent P. Coulon, safety director for The Sealright Co. Inc., Fulton, N.Y., will preside at the *Paper Converting* round table, with Hugh Jackson, manager of safety and training for The Johns-Manville Corp., New York, N.Y., serving as recorder.

Insulation Products safety problems will be discussed at a session over which Amos S. Kean, safety director for Armstrong Cork Co., Lancaster, Pa., will preside; the recorder will be A. W. Smith, personnel and service manager for Bird & Son inc., East Walpole, Mass. A. O. Vranek, safety director for Container Corp. of America, Chicago, will be in charge of the *Folding Paper Box* round table; conference recorder will be E. F. Ripstra, also of Container Corp. at Chicago.

A panel discussion on *Pulpwood Logging* will be under the direction of H. H. Jefferson, training officer for the American Pulpwood Association, New York, N.Y.; the recorder is to be R. C. Hammond, safety engineer for Employers Mutual Insurance Co., Ironwood, Mich. Panel members will be Tom Thompson of Tomahawk Timber Co., Byron C. Oyster of Weyerhaeuser Timber Co., Peter Lannon Jr. of West Virginia Pulp & Paper, and T. S. Jones of the Thunder Bay Timber Operators' Association.

The annual luncheon on Thursday will be highlighted by an address by Mayor Jimmy Arrington of Collins, Miss. Presiding will be G. J. Bienvenu, general superintendent of the Container Division of Gaylord Container Corp., Bogalusa, La.

Human Values Vital to Safety Program: Schroeder

More than 700 delegates to the May meeting of the Fox River Valley and Lake Shore Safety Conference in Green Bay heard Andrew W. Schroeder II emphasize the importance of human values in any safety program. Mr. Schroeder is secretary and personnel director of Scott Paper Co., Chester, Pa.

The speaker declared that in his own experience the cost of 1951 accidents at Scott's Brunswick, Ga., plant has long been forgotten, but that he never can forget the young father of five children who died on Christmas eve from an injury suffered in a moment of inattention. Nothing less than a perfect safety record should be the goal, Mr. Schroeder continued, pointing out that, "Improvement in a safety record doesn't mean anything to those who are victims."

Robert Blunden, safety director for Marinette Paper Co., a Scott plant, won the conference slogan prize.

Conference participants in addition to Mr. Schroeder included Pat Jones, safety supervisor for Falls Paper & Power Co.; John Arthur, safety director for Green Bay Box Co.; Al Johnson, personnel director for Munising Paper Co.; Ed Den Dooven, general superintendent of Northern Paper Mills; Bernard J. McClosky, director of personnel and safety for Hoberg Paper Mills; Harry Niles, director of personnel and safety for Northern; Mark Rehrauer, safety director for Nicolet Paper Co.; B. K. Gage, sales manager for Bay West; Fred Schils, safety director for Green Bay Box; Mrs. Joyce Wilson, R.N., industrial nurse for Northern Paper; John E. Goode, assistant chief engineer for Northern Paper; Ralph Van Duren, engineer at Hoberg, and Walter Dundore, production manager for Beloit Iron Works.

Morningstar
ESTABLISHED 1931

MORNINGSTAR, NICOL, INC.
IS NOW EXCLUSIVE DISTRIBUTOR OF
AMIZYME

The Pabst Brewing Company, manufacturers of Amizyme—a better starch converting enzyme—announces the appointment of

MORNINGSTAR, NICOL, INC.
Scientific Starch, Dextrine and Natural Gum Service
630 West 51st Street, New York 19, N. Y. • Phone: COlumbus 5-2860

as exclusive distributor of Amizyme to the Paper Industry.

Because of their long experience, wide acquaintance and excellent standing in the trade, we believe that Morningstar, Nicol, Inc., are exceptionally well qualified and equipped to serve the Paper Industry. Please give them the same consideration and courtesy you have always shown to us. You can expect to receive quick, efficient service on all inquiries and orders for AMIZYME sent to Morningstar, Nicol, Inc.

PABST BREWING COMPANY
917 West Juneau Avenue
MILWAUKEE 3, WISCONSIN

The Paper Industry Patent Reviews

MELVIN NORD*

Supercalendered Glassine Paper

Two recent patents relate to the subject of supercalendered glassine paper, one to the supercalendering process itself and the other to a plasticizing medium.

Two sheets of paper can be simultaneously subjected to supercalendering to produce glassine or grease-proof sheets, each of which is finished on one side only. The method is described in U.S. 2,635,509, issued April 21, 1953, to Ira C. Cowie

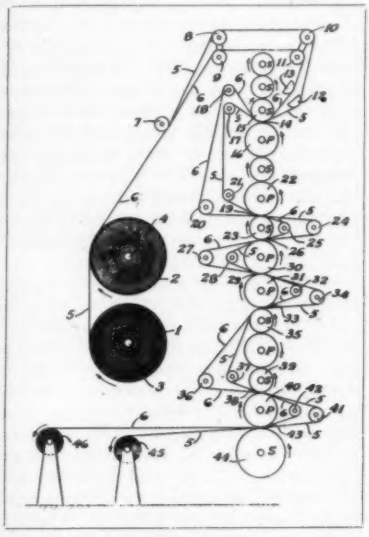


Fig. 1

and Jasper H. Purcell, and assigned to Glassine Paper Co., West Conshohocken, Pa.

It has been found that unsatisfactory results are obtained when two sheets are processed simultaneously if they are sandwiched together. Defects arise from the generation of water vapor bubbles during the drying of the sheets. These bubbles ride between the sheets directly in front of the calender nip, distorting or cutting them. However, if the two sheets are kept separated before and after they go into each nip of the stack, this difficulty is avoided, according to Cowie and Purcell. The method is illustrated in Fig. 1. Such an operation results in two sheets, each with a glaze on its outer face, and with smooth, but unpolished inner faces. Economy is claimed in the production step, since two sheets are produced simultaneously. It is claimed that one glazed face is sufficient for most applications, and is actually superior in some cases. For example, slipping in handling is minimized when one face is unpolished.

In U.S. 2,636,833, issued Apr. 28, 1953, to George C. Borden, Jr., assigned to Riegel Paper Corp., New York, N.Y., invert sugar is used as a plasticizing medium. In order to avoid caramelization of the sugar —thereby darkening or yellowing the glassine paper—the hot, supercalendered paper is cooled rapidly below 140° F. The cooling is accomplished by blowing cold air against the paper as it passes from the supercalender to the wind-up roll, by passing the paper in contact with chilled rolls, or by running the last calender roll at a temperature which will accomplish the required reduction in temperature. The amount of plasticizer retained by the paper may be as high as 10 to 15 per cent.

Slice Apparatus in Papermaking

U.S. 2,637,250, issued May 5, 1953, to Benjamin E. Teale of Dalton, Mass., relates to improvements in slice construction for use in connection with the Fourdrinier wire of a paper machine. An essential feature of the apparatus is that the slice construction is adjustable back and forth, so that it may be positioned as desired relative to an element of the paper machine such as another slice or head box.

Thermosensitive Papers

U.S. 2,637,657, issued May 5, 1953, to Karlis V. Ozols, and assigned to Product Development Laboratories, Inc., New York., N.Y., relates to compositions for thermosensitive recording papers, i.e., to papers upon which a permanent record can be made by the use of a heated tracing device.

A mixture of high temperature (i.e. 250° to 300° C.) decomposable trace-producing salts (such as lead formate) with low-temperature (i.e. 150° to 250° C.) decomposable heat-producing salts (such as mercuric oxalate) is used. A non-hygroscopic binder (such as ethyl cellulose) is also added.

Paper Roll Handling Truck

In U.S. 2,635,774, issued April 21, 1953, to E. Ryan Backofen and Alfred Wayne Gunning, assigned to Clark Equipment Co., Buchanan, Mich., an industrial truck is described which is designed for handling paper rolls. As shown in Fig. 2, the new truck clamps the roll at a position short of the roll's diameter. This makes it unnecessary to break out each roll manually from a group in order to clamp it, as is the case with the usual type of truck. The apparatus described is capable of picking up rolls in either the horizontal or vertical position and stacking them in either position.

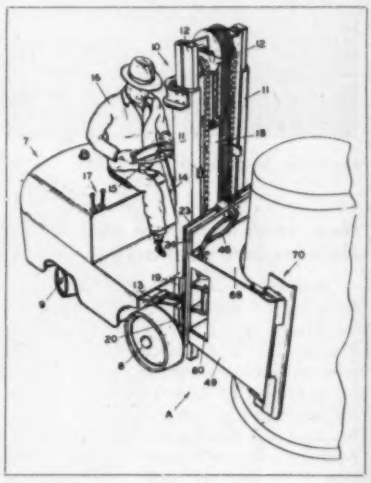
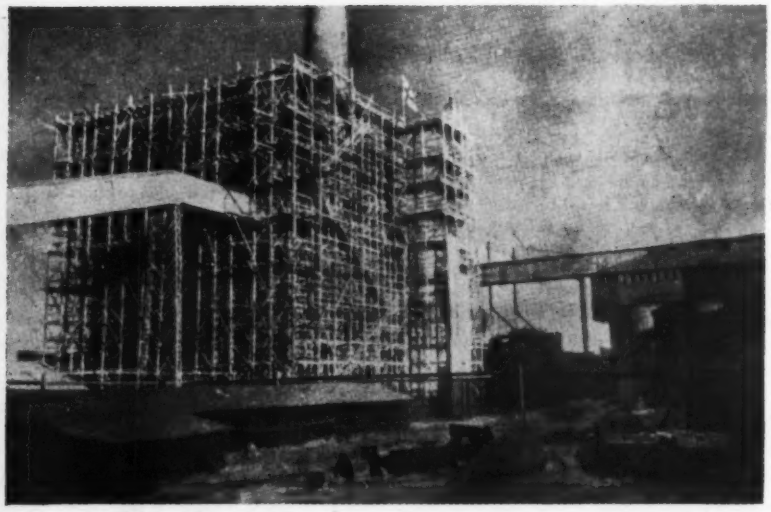


Fig. 2

Other Patents of Interest to the Paper Industry

Subject . . .	*Inventor or Assignee . . .*	*Patent No.*	*Date*
Production of hardboard products from wood fibers	Plywood Research Foundation	2,635,301	4/21/53
Production of paper of high porosity and wet strength for vacuum cleaner bags	Riegel Paper Corp.	2,635,958	"
Water-proof translucent paper	Eastman Kodak Co.	2,635,970	"
High wet- and dry-strength paper by addition of a cellulose derivative	Hercules Powder Co.	2,635,972	"
Pulp molding apparatus having a forming device and a spring-actuated flexible permeable structure	Georges Pierson	2,636,422	4/28/53
Apparatus for burning waste pulp digester liquor	The Babcock & Wilcox Co.	2,636,813	"
Method of producing a flat moisture proof paper lamination	The Mead Corp.	2,636,838	"
Moisture and grease-proof paper	Highland Manufacture Co.	2,637,665	5/5/53
Manufacture of laminated paper materials	The Glidden Co.	2,637,675	"
Method and apparatus for testing the tearing resistance of paperboard	The Institute of Paper Chemistry	2,637,996	5/12/53
Manufacture of laminated reinforced paper	Glas-Kraft, Inc.	2,638,146	"
Vibrating screening and filtering apparatus for aqueous pulp suspensions	Ben Cowan and Adam Cunningham	2,638,226	"
Manufacture of telefacsimile recording and duplicating paper	Timefax Corp.	2,638,422	"

*Patent Attorney, 664 Putnam, Detroit, Mich.



The boiler building at Nuottasaari

New soda recovery unit of the Nuottosaari pulp mill in Finland

On February 28th, the so-called "roofing ceremony" of the soda recovery building at the Nuottosaari kraft mill was celebrated. The building (the reinforced concrete skeleton of which is shown in the illustration) has a content of 21,300 cubic meters. The brickwork is now being completed, and the building will house a Babcock and Wilcox recovery unit, capable of a steam production of 70 tons per hour, with steam temperatures of about 460° C. The boiler is 30 meters in height and is equipped with an air preheater and cyclone evaporator in which the final evaporation of the black liquor will be effected by stack gases. The unit should be in operation in 1954. Anon. *Finnish Paper and Timber,* **No. 2,** 1953. (In English.)

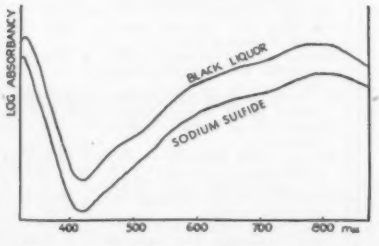
Determination of sulfides in kraft black liquor

This is a contribution from the Swedish Forest Products Research Laboratory. The method for determining sulfides is based on the development of a molybdenum blue coloration.

The following reagent solutions are required: (a) 100 gm. crystalline ammonium molybdate, in 1 l. of water (filtered after two days); (b) 342 ml. of 85 per cent phosphoric acid per l.; and (c) 100 gm. anhydrous sodium sulfite in 1 l. of water. A mixture (d) of these reagents is made just prior to use; (d) consists of 50 ml. (a), 125 ml. (b) and 60 ml. (c) diluted with 220 ml. of water. The black liquor is diluted with distilled water (recently boiled) so as to insure one part of the original liquor per 500-1000 solution. Fifteen cc. of this diluted solution is added to 25 cc. of mixture (d) and the mixture diluted with 10 ml. water, shaken, centrifuged and the color of the supernatant liquid measured in the red region of the spectrum (preferably at 700 mμ).

Readings are made in a Beckman model B spectrophotometer. The concentration of sodium sulfide in grams per liter of the original black liquor is calculated by means of a standard calibration curve. The latter is obtained by a procedure similar to that given above, using purified, crystalline sodium sulfide ($Na_2S.9H_2O$) in place of the black liquor.

The effects of such compounds as the sulfites, thiosulfates, mercaptans, *et al.* on the accuracy of the method are studied, and evidently only alkali polysulfides will react similarly to sodium sulfide. The method is sensitive to 0.1 mg. of sulfide per 100 ml. or 1 mg. per l. Accuracy of the method is of the order of two per cent, precision about 1.5 per cent. The accompanying figure shows spectra for blue solutions obtained from sodium sulfide and from a black liquor. Olof Bethge. *Svensk Papperstidn,* **56,** 255-8 (1953). (In English.)



Absorption spectra for the blue solutions obtained from sodium sulfide and black liquor

The existence of a lignin-carbohydrate union in wood

A review is given of arguments in favor of and opposed to the existence of a lignin-carbohydrate complex (I) in wood. By extracting poplarwood (II) with aqueous acid at pH ranging from 4.15 to 2.2, the overall wood losses range from 23.8-34 per cent, the lignin (III) losses, from 10.3-13.1 per cent [of the total (III) in I], and the pentosan (IV) losses vary from 66.7-83.7 per cent of IV initially present in I. In all cases, the ratio of the loss of IV to the loss of III remains practically constant (6.39-6.47). II heated eight hours at 140° loses 16-18 per cent; the resulting aqueous solution is heated with 0.75 *N* sulfuric acid, and at definite intervals any precipitate that is formed is filtered and analyzed (for carbon, hydrogen and methoxyl) and the reducing values of the corresponding solutions are determined. The initial precipitate (0.58 per cent [formed after six hours]) appears to be a "normal" III (containing 63.1 per cent carbon, 5.7 per cent hydrogen and 17.5 per cent methoxyl); the reducing value of the filtered solution is then at its highest (22.1 gm. cuprous oxide per 100 gm. I). Thereafter, the reducing value drops markedly, as do the methoxyl and carbon content of the precipitates. These results are discussed without reaching any conclusion regarding the existence of a soluble I.

II is chlorinated in an anhydrous medium (probably carbon tetrachloride), and the product extracted successively with cold ethanol and hot ethanol; each extract is fractionated by a series of treatments outlined in an elaborate flow chart. Each fraction, when subjected to paper chromatography, fails to show the presence of free saccharides *unless prehydrolyzed with N hydrochloric acid.*

In a second series, II is heated at 140° with ethanol containing small amounts of hydrochloric acid. The extract, concentrated *in vacuo,* is then subjected to a series of fractional precipitations (and solutions) which are outlined in a suitable flow chart. A water soluble fraction, evaporated and dried, extracted with acetone, followed by acetylation, yields a benzene-soluble portion from which two fractions are obtained; neither of these show the presence of sugars until hydrolyzed with *N* hydrochloric acid.

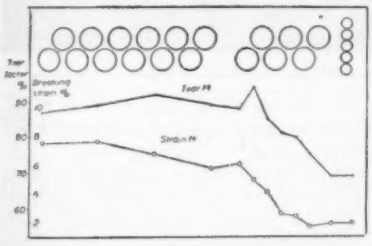
The data are presented as experimental evidence that in II, I actually exists. 29 references. P. Traynard, A. M. Ayroud, and

A. Eymery (Ecole Francaise Papeterie, Grenoble). *Assoc. tech. ind. papetière Bull.*, 45-52 (1953). (In French.)

Studies in tearing strength; influence of microcrêping

When paper is allowed to shrink freely while drying, it becomes "micro-crêped," and the influence of this micro-crêping on tearing strength is explored and compared with the stress-strain properties of the sheet. Laboratory experiments show a close relationship between extensibility and tearing strength, when hand-sheets are subjected to unidirectional stresses both in the dry condition and during the drying period. In the dryer section of the paper machine, the same factors influence extensibility and tearing strength. These two properties vary in the same way over the width of the reel of the paper machine, with maxima at the edges. This is shown in studies of samples from three different kraft paper machines.

The possibility of making paper with high extensibility and tear is discussed. Variations in tearing strength of the sheet passing through the dryer section are studied by testing samples from different points in the dryer (cf. accompanying figure) and allowing them to dry without tension in air. A large decrease both in tear and extensibility takes place at about 75 per cent dryness of the web.



Tear factor and breaking strain in machine direction for paper samples taken at different positions in the dryer section

The possibility of decreasing this drop by suitable adjustment of the draws and felt tension and by special treatment of the drying cylinders is discussed. The tests are carried out with the Australian dynamic tear tester, a description and halftone of which are given. Thomas K. Wahlberg. *Svensk Papperstidn.*, **56**, 124-130 (1953). (In English.)

Determination of lignin in semichemical pulps

Four methods are studied in connection with the determination of lignin (and the bleachability) of semichemical pulps.

(a) The methoxyl content gives no true estimate of the lignin content, because of the relatively large amount of carbohydrate material present which also carries (ether) methoxyl groups.

(b) Spectrophotometric methods are inadequate because different "lignins" appear to be measured in different pulps and also because certain hemicellulose fractions in phosphoric acid solution give rise to high absorption in the same region as does the lignin. Furthermore, phosphoric acid solutions of the hemicelluloses give high absorption in the U.V. region due to the high light scattering of the solutions. These findings indicate that the spectrophotometer cannot be used for quantitative lignin determinations.

(c) The so-called "CCA 5" method which involves the use of sulfuric acid gives reproducible results.

(d) The Roe number gives fairly reproducible results (reasonably well correlated with those of (c), up to lignin contents of about 8-10 per cent). Thirteen references. Karl J. Björkqvist, Leif Jörgensen and Folke Magnusson. *Svensk Papperstidn.*, **56**, 33-37 (1953). (Original in Swedish, with English summary.)

Lignin studies; use of high pressure autoclaves

By treating lignin quite drastically with lime and methanol, a crystalline degradation product is formed. This is identified as pentamethyl phenol (I). On oxidation, I yields (II) which is duroquinone, the structure of which is shown by its synthesis from durene. The dihydro derivative of II bears a certain structural relationship to Vitamin E, which is discussed briefly.

The main part of the article is devoted to various autoclaves used in high pressure work (such as that leading to I). For example, in Fig. 2 is shown a 60 l. autoclave made from an old gun. In the upper portion the gun closure has been retained in

design · fabrication

STAINLESS STEEL* NICKEL* INCONEL* MONEL*
EVERDUR HASTELLOY ALUMINUM CARBON STEEL
*Solid and clad

E. C. WOLFERZ
ALLOY EQUIPMENT
20 PARK STREET, BELLEVILLE, NEW JERSEY
TELEPHONE: BELLEVILLE 2-5667

Southern Representative
W. W. HENDERSON & SONS
P.O. Box 1085 Pensacola, Florida

ENGINEERED FOR THROTTLING SERVICES . . .

DeZURIK VEE-PORT VALVES

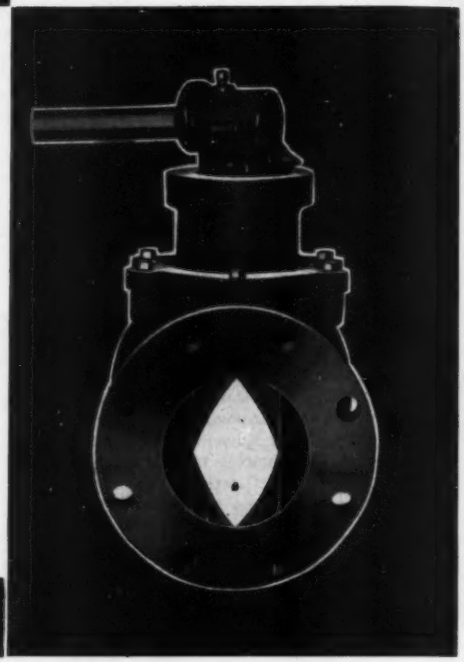
ORIFICE SHAPE NEVER CHANGES!

IT'S IMPORTANT that your stock-flow control valves have orifices that can be changed in SIZE without change in SHAPE !

The DeZURIK VEE-PORT VALVE has a distinct diamond-shaped orifice which can be increased or decreased in size as desired, but which retains precisely the same shape at all times. The rate of discharge remains constant at any setting. No place in these valves is there a spot where stock can build up and pack to interfere with uniform flow.

These valves provide decided advantages on refiner systems, pump discharge lines, stock-level control systems and other points where production and quality depend upon delivery of a steadfast, uniform volume of stock.

DeZurik Vee-Port Valves are available in 3" to 16" sizes, made in a broad range of materials, with lever, gear or cylinder operators, and also with positioners for automatic-control applications. Write for complete information.



DeZURIK SHOWER CO SARTELL, MINNESOTA

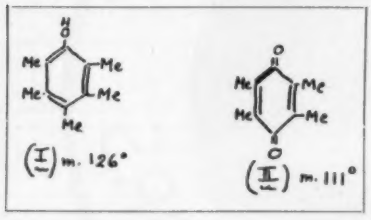


Figure 1

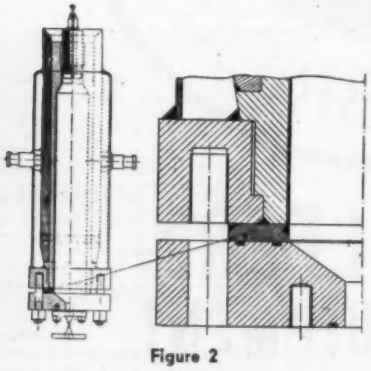


Figure 2

a modified form. The lower opening is closed by flanges, the gun barrel being provided with a flange with protruding rings. These higher parts press into copper-filled grooves. Evidently, this is the preferred type of construction.

Other autoclaves are fully illustrated in the original article, including a standard one (of American manufacture) that takes pressures up to 5000 psi and a special autoclave used for pressures of 10,000 psi, but evidently the latter gave some trouble and required modifications.

The importance of safety measures (and how these were met) and techniques for the formation of compound I are outlined and structural formulas are given, showing various stages of this methylation (starting with the cresols and ending with I) indicating that all in all 19 methylated monohydric phenols are possible.

Eleven references and 22 figures. This is the work of the Research Institute of Rauma-Repola Oy, Rauma, Finland. Ragnar Monnberg. *Paper and Timber*, **35**, 189-99 (1953). (In Finnish, with a rather full English summary.)

Radioactive materials in packing containers

X-ray film packed in cardboard containers (I), when later developed, shows dark spots, which are subsequently traced to radioactive dust in I. In one series of analyses, the ash from about eleven kilos of I is treated 75 hours at 70°C. with 20 per cent hydrochloric acid. The filtered solution is concentrated and freed from silica, and the filtrate treated with barium chloride and sodium sulfate, thus forming a barium sulfate precipitate (II) which is radioactive. Other components are also separated (by a fully developed analytical scheme). The various fractions are examined systematically for beta-activity (shown to be absent from the reagents used in the separations).

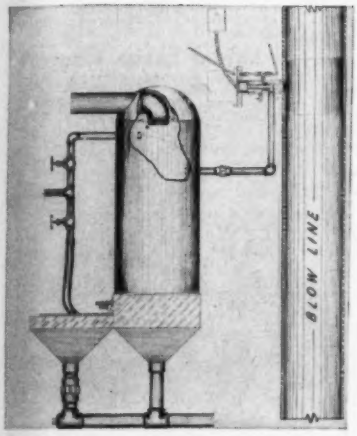
In another series, those portions of the containers are cut out and incinerated which show a relatively high beta activity (350 counts per minute). This ash is treated as above and also subjected to the barium sulfate precipitation. This barium sulfate precipitate (III) is also radioactive. However, II and III show certain differences. Whereas the radioactivity of II increases during the first six days and then decreases gradually, the activity of III (which was very slight initially) rises rapidly during 20 days and then levels off. The significance of these differences is discussed. Apparently disintegration products emanate from the uranium (present in the fine dust of I).

The seriousness of radioactive dust in packaging is outlined and may present even a more critical problem in the future. J. Pouradier, A. M. Venet, and H. Chateau. *Assoc. tech. ind. papetière Bull.*, 34-37, (1953). (In French.)

Intrinsic viscosity of celluloses in cupriethylenediamine

The intrinsic viscosities of twenty cellulose samples ranging in degree of polymerization from 150 to 2000 are determined in cupriethylenediamine. A linear relationship is found to exist between the intrinsic viscosity and the logarithm of the relative viscosity of a solution containing 100 mg. of cellulose in 100 ml. of solution. A contribution from the State Institute for Technological Research in Helsinki, Finland. Lea Valtasaari. *Valtion Tek. Tutkimuslaitos*, No. 104, 3-16 (1952), through *C.A.*, **47**, 3557 (1953). (In English.)

The Paper Industry New Products



Digester stock sampler

A sample of pulp from various levels in the digester, instead of one particular level, can be obtained with the new Murco-Mosinee automatic digester stock sampler. With this equipment it is possible to know when and where shives and poorly cooked pulp are being made, permitting the effective use of corrective measures on the next cook.

The timer is set so that any number of pulp samples can be taken automatically during the blowing of the digester, which furnishes a check on various levels as blown, since time and level coordinate. The timer can also be set so that a large or small sample can be taken from the digester.

There is no extra piping for the digester. The stock sampler can simply be attached to the common blow pipe. When ready to blow, the main switch is closed and this in turn sets the timer in motion. The timer controls the opening and closing of the special valve that controls the position of the sampler piston permitting the stock sample to flow from the blow pipe into the receiver. The stock sample, after it is blown into the receiver, can be automatically washed and cooled, ready for laboratory analysis. *D. J. Murray Mfg. Co., Wausau, Wis.*

Water-emulsion adhesives

Fast initial tack, retack and long "open time" are features available in a series of newly designed water-emulsion adhesives developed for application to seams in the manufacture and in the final closure of waterproof paper bags, wraps and case liners. Tests conducted by the manufacturer indicate the adhesive has fungi resistance, low temperature flexibility at zero degree F. and resistance to water penetration of 8 hours minimum.

The adhesive can be applied by machine or by hand brushing to both surfaces in seaming operations and allowed to air dry, then combined to form a permanent bond. Another important point is resistance to flow at high temperature (140°F.) whereby the adhered seams will not shift, flow or separate after 24 hour subjection to this heat. *Paisley Products, Inc., 1770 Canalport Ave., Chicago 16, Ill.*

Materials handling trucks

Four new electric materials handling trucks have been introduced to the market. Each of the four models will operate in 6-ft. aisles with 48 in. long loads.

The Model M, a 3,000 or 4,000 lb. capacity riding type outrigger fork truck will stack 10½ ft. high and travel up to 4 miles per hour. The Model M low lift truck transports both load and the operator. If long hauls are not involved, walkie trucks will do the job. As in the case of the riding type Model M, the new JackStacker and JackLift electric walkies with capacities to 6,000 lb. easily stack or maneuver in 6 ft. aisles. These trucks are manufactured in either pallet or platfrom types. *Lewis-Shepard, Dept. R-1, Watertown, Mass.*

Alarm system

The "Max-Alarm" system is designed as a safety or warning device for processes or equipment where the flow through a pipeline is not to exceed a given value. With a built-in relay having a capacity of 8 amps. at 125 v, it can be used to operate a visual or audible warning signal and also to shut off a pump or close a motorized valve when the maximum limit is exceeded.

The flow sensing unit used with the system is unaffected by pressure variations in the measured fluid and can be used at pressures up to 20,000 psi and at temperatures from 4° Absolute to 1200°F. The system can be used with toxic or highly corrosive liquids, viscous fluids, liquefied gases and many other hard-to-handle liquids.

A signal light on the panel indicates when the power switch is on and the instrument is operating, while a second light flashes on only when the flow rate has exceeded the maximum value. The system includes a reset button for turning off the warning light and resetting the alarm relay after the necessary corrective action has been taken. *Potter Aeronautical Co., 87 Academy St., Newark, N. J.*

Mixer

Increased production and a minimum of maintenance are the major attractions of a new type change-can mixer. A description of its design features indicates the advantages of this unit. The drive assembly swings easily around the post, which is affixed to the floor and wall or overhead beam. The height of the drive unit, and consequent agitator location, is adjusted through the hand crank and gear track.

The outstanding feature is the removable turbine agitator, which has a pitched-blade impeller and peripheral speed designed for fast and thorough mixing. This unit is coupled to the drive by inserting the shaft end into the drive socket and turning. A spring lock holds the two together. Disconnecting is accomplished just as easily merely by twisting and lowering. *Industrial Process Engineers, 8 Lister Ave., Newark 5, N. J.*

Solenoid high pressure valves

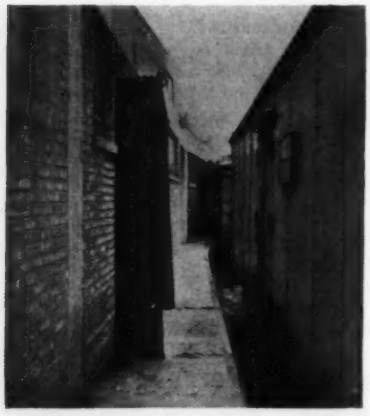
Solenoid electric valves for high pressure lines are made in sizes from ½ in. to 1½ in., and for pressures to 3,000 psi. Designed with only three moving parts and no external linkage, normal valve maintenance is reduced by the packless construction incorporated in the design. These valves can be used for any application where the media are not harmful to bronze or stainless steel. Coil housings for various conditions are offered in dust-tight, water-tight or explosion-proof housings for use in hazardous atmospheres. *Atkomatic Valve Co., 545 Abbott St., Indianapolis 25, Ind.*

Enclosed signal relay unit

Model LPG, a new relay plug-in unit, employs the same relays and all other parts used in the hermetically sealed model, but instead of being sealed hermetically it is completely enclosed and dustproof and may readily be taken apart. Due to a less expensive construction, as compared with hermetically sealed units, these new "LPG" relay units are said to offer greater economy, yet are just as flexible and versatile.

Over 100 standard circuits are available, many with universal features permitting changes in the operating sequences in the

field with just simple terminal connections. With their unitized system of construction, these new "LPG" units can be assembled into any number of multiple stations from a single unit to many hundreds in the same system. *Tigerman Engineering Co., 4332 N. Western Ave., Chicago 18, Ill.*



Loading dock shelters

Loading dock shelters that are precision-constructed and individually engineered to fit specific requirements are now being mass-produced. Made of canvas, these shelters extend outward on a collapsible steel framework to shelter truck or freight car loading doors of any size and collapse flush against the building when not in use. Each of several standard models can also be adapted to fit any unusual condition of use. *Atlas Products Co., 1300 West Washington Blvd., Chicago 7, Ill.*

Electronic level indicator

"Telstor," a new electronic instrument for continuous level measurement, without mechanical or pneumatic means, is usable with tanks, bins, hoppers, pressure vessels, fuel tanks, water reservoirs or practically any type container. Materials that may be measured include almost any type of liquid, viscous fluid or granular solids.

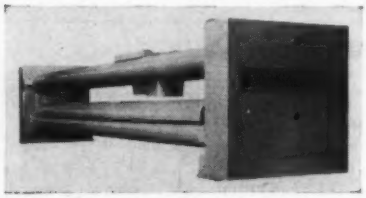
The instrument consists of an electronic unit, an insulated electrode and an indicator unit. The electronic unit is mounted adjacent to the tank, bin, or grain elevator. The electrode is mounted from top to bottom in the tank or bin, etc., and connected by coaxial cable to the electronic unit. The indicator unit may be mounted at a central or remote location, up to one mile from the bin, tank, etc.; cable or wiring connects it to the electronic unit.

Operation is simple. The electrode in the container becomes one side of a radio frequency capacitor, and the walls of the bin or tank the other side. The material stored in the tank or bin increases the capacity between the electrode rod and the container walls, in proportion to the depth to which the electrode is immersed. The level of the stored material is then shown on the indicator unit scale meter. *Fielden Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.*

Turret lens

A new giant turret lens has been developed for the Tel-Alarm annunciator signals. According to the manufacturer, the new lens permits visibility of a warning light at distances at least three times as great as with conventional bull's-eye types.

These turret lenses are made of a durable plastic material. Each lens has two sections which correspond to the two lights of the Tel-Alarm signals. The upper portion is one color and the lower usually white frosted. With these lenses on annunciators, it is possible for the operator of the control room to see at a glance which alarm signal is flashing. The turret lens also affords more clearance for the light which fits inside it. *Tigerman Engineering Co., 4332 North Western Ave., Chicago, Ill.*



Enclosed bracket mounting

A new enclosed bracket mounting for economically bringing the advantages of beta gauge measurement to industries producing wide sheet material has been added to the line of AccuRay beta gauge mountings.

A basic feature of the mounting is the design which permits the source of radiation and detector unit to travel back and forth across sheet on separate arms and never vary their alignment.

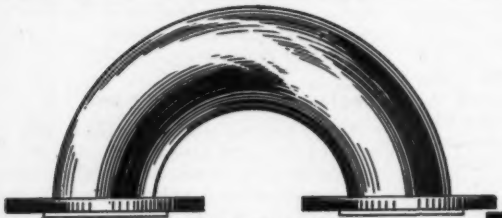
Fabricated of welded steel tubing and plates, this standard mounting has been built to handle sheet widths up to 100 in. An important advantage of the AccuRay unit is its compactness, which permits it to be installed without costly alterations in "jammed" production lines. The gauge can be installed at various angles to fit slanting pass lines of material. *Industrial Nucleonics Corp., 1205 Chesapeake Ave., Columbus 12, Ohio.*

Fork lift truck

Principal features of the improved Yardlift-150, pneumatic-tired fork lift truck of 15,000 lb. capacity, are increased horsepower, lighter weight and better hydraulic steering.

A new power plant develops more horsepower at fewer rpm. Weight reduction of 2300 lb. provides increased flotation. In the event of motor stoppage, steering can be accomplished mechanically. A separate hydraulic system is used for the power steering. A pivoted-type steering axle is standard on the truck, permitting constant wheel contact during travel over uneven surfaces.

New fork bars are narrowed vertically to help increase the driver's vision. The opening between upright channels and lift cylinders has been increased by 3½ inches. This new upright, made from rolled steel sections, practically eliminates the possibility of twisting or spreading as a result of heavy, cumbersome loads, according to the manufacturer. The overhead guard rack is optional. *Clark Equipment Co., Industrial Truck Div., Battle Creek, Mich.*



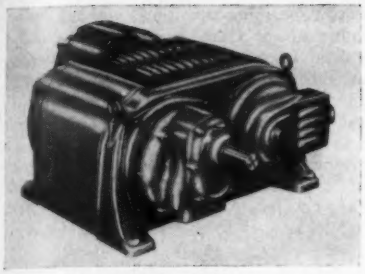
We Fabricate to Your
SPECIFICATIONS

A.S.M.E. Pressure Vessels
Smokestacks
Boiler Breechings
Oil Tanks
Chemical Tanks
Stock Tanks
Blow Tanks
Brine Tanks
Fabricated Pipe
Head Boxes
Chest Inserts
Digesters
Laboratory Tanks
Tubing
Fittings
Flow Boxes
Wax Tanks
Float Chamber Tanks
Reel Stands

FELKERWELD *for Endurance.* **Our more than 40 years' experience in fabricating plain steel, applied to stainless steel when it came into the market enabled us to develop our FELKERWELD PROCESS for ENDURANCE, with such metals as Stainless Steel, Stainless Clad Steel, Inconel, Monel, Nickel, Copper and Aluminum Bronze. FELKERWELD is your guarantee for quality and workmanship.**

FINE FABRICATION by FELKER

FELKER BROS. MANUFACTURING CO.
MARSHFIELD, WISCONSIN



Variable speed motor

Varidrive motors are now available in horizontal assembly up to 30 hp through the addition of a new horizontal frame size, 64 VE. This development makes possible a more compact motor installation in applications demanding horizontal assemblies.

The 64 VE possesses all the features of the upright 64 Varidrive. It is also available in combination with the U. S. Syncrogear, with either single or double reduction gearing.

Motor controls may be located above or at the side of the motor. Remote controls are available either with mechanical extensions or electric push button stations. *U. S. Electrical Motors Inc., Box 2058, Terminal Annex, Los Angeles 54, Calif.*

Far-infrared electric radiant heaters

Glued paper sheets are now dried in less than seven seconds using far-infrared electric radiant heaters. In the mounting operation one dry web and a glued web of paper are joined at a "glue line" and travel from 50 to 65 ft. per minute through the radiant oven. The production rate varies with type of paper.

There are two banks of four 1250 w Chromalox radiant heaters each—one above, the other beneath, the web. The heaters are 5½ in. from the web, on 12 in. centers. With total capacity of 10 kw., an input controller and magnetic contactor provide variable control for each bank of heaters, and each bank has its own push button control.

As a safety measure, provision is made for turning the heaters away from the web when it is not moving. All units are linked together and rotate simultaneously at the turn of a hand crank. To permit cooling of the paper, several feet of vertical passage are provided at the take-off end before winding on rolls. *Edwin L. Wiegand Co., 7500 Thomas Blvd., Pittsburgh 8, Pa.*

Impregnated asbestos and glass fiber packing

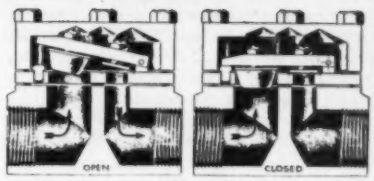
Greater resiliency, resulting in a better seal and longer life, has been imparted to the ordinary white braided asbestos Teflon impregnated packing by a new type construction which employs a braided or twisted core of Teflon impregnated glass fiber over which is braided several jackets of the best quality asbestos yarn thoroughly impregnated with Teflon.

The improvement is most pronounced on high speed centrifugal acid pumps, where solid braided Teflon impregnated packing had a tendency to heat up due to its lack of resiliency. This new construction results in a packing which is almost rubberlike in the larger sizes. Laboratory and field tests also indicate that the packing has greater acid resistance. *Flexrock Co., 3652 Filbert St., Philadelphia 4, Pa.*

Remote water cooler

Fifty-degree drinking water can be served through several wall fountains from a remote-type electric water cooler. A water-cooled model (WWP13) is available for factories. This model will supply 21.2 gal. per hour of 50° drinking water where the inlet temperature is 70° F. and the room temperature is 80° F.

The water cooling chamber is of brass with the interior surface heavily tin-plated. The refrigerant flows through coils of copper pipe. The chamber is insulated by granular cork sealed in an air and moisture-tight enclosure. All water-carrying parts are insulated to eliminate sweating. *Electric Appliance Div., Westinghouse Electric Corp., 653 Page Blvd., Springfield 2, Mass.*

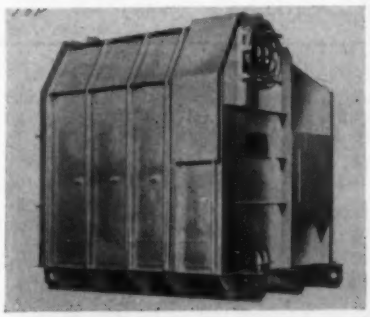


Impulse steam trap

A new impulse steam trap for use where condensate must be handled in unusually large quantities has been developed. This new trap, known as the Series 50 Yarway impulse steam trap, is a companion to the Series 60 120 Yarway impulse steam traps.

An important feature of these traps is their ability to maintain high, even temperature in process equipment. Their small size and light weight make them particularly desirable where close quarters piping is involved. They are constructed throughout of stainless steel.

The basic operating principle of the Series 50 impulse trap is the same as that employed in Series 60 and 120 types. Series 50 employs a hinged lever and two valves mounted on a valve seat plate, and the control flow which governs opening and closing action of the valves is obtained by allowing small clearance between inlet and outlet valves and their respective seats when the lever is at rest. *Yarnall-Waring Co., Philadelphia 18, Pa.*



Package boiler

A new standard line of package-type water tube boilers designed especially to meet many present day requirements for steam and high temperature hot water in industry, power and government projects has recently been announced.

The boilers are offered in sizes ranging

ENGLISH ECCO CLAYS TRADE MARK CLAYS

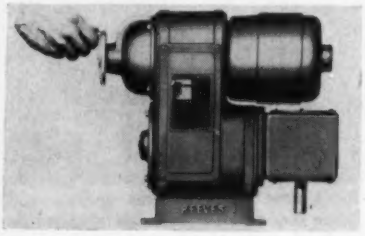
UNIFORM • SUPERIOR • DEPENDABLE

English China Clays Sales Corporation
551 Fifth Avenue, New York City

from 7,500 to 30,000 lb. of steam per hour (or equivalent water ratings) and in design pressures of 200, 300, 600 and 900 psig. All are of a 2-drum, bent tube design, featuring a water cooled furnace in which tangent water tubes completely shield the full length combustion chamber. Large water capacity gives the boilers exceptional ability in handling heavy peak and fluctuating loads. Provision for superheat up to 200° F. is available as auxiliary equipment.

Firing is by oil or gas or combination burners. Units are offered with complete burner and control assembly, or the boiler can be purchased separately.

The boilers are enclosed in a gas tight insulated steel jacket of special sectional design and are suitable for outdoor as well as indoor installation. *Springfield Boiler Co., 1973 E. Capitol Ave., Springfield, Ill.*



Variable speed drive

A fractional hp Vari-Speed Motodrive with right angle reducer has been added to Reeves complete line of variable speed drives and controls.

This variable speed drive with right angle reducer combines in one space-saving unit any standard NEMA frame, Type C, face-mounted motor, the Reeves speed-varying mechanism, and the new right angle worm gear reducer, which is available on all fractional hp Motodrives in either horizontal or vertical models, with speed ratios from 2:1 through 10:1.

The output shaft drives up, down or at right angles in the horizontal type of units, and drives down or at right angles in the vertical model. The right angled shaft arrangement is of great advantage in many applications—saving valuable floor space by making it possible to put the fractional hp Motodrive flat against the driven machine or by mounting the drive directly above or below the driven equipment.

The right angle reducer, an alloy steel helical worm and bronze gear, is ruggedly built to withstand heavy-duty, continuous operation. *Reeves Pulley Co., Columbus, Ind.*

Conveyor belt weighing system

Development of a new conveyor belt weighing system capable of electronically adding, subtracting and recording the tons per hour of material delivered to one or more points was announced recently.

The new belt system is applicable for belt-conveyed materials ranging from low-grade ore to refined sugar. The system continuously weighs material being delivered and provides running measurements of tonnage, as well as the total tonnage delivered over a period of time. These measurements can be transmitted over considerable distance either to a foreman's office or to a central control panel board. Chart records are also automatically maintained.

If one large belt supplies several other belts at different places along its length, the system can add and subtract to measure the quantity supplied to any or all belts. The new system can also control the blending of several different materials on the belt. *Trans-Weigh Co., Wayne, Pa., and Industrial Div., Minneapolis-Honeywell Regulator Co., Wayne & Windrim Aves., Philadelphia 44, Pa.*

Diesel powered fork lift trucks

To meet the growing demand for diesel-powered units, yet retaining all the basic operating features of gas-driven equipment, four of the most popular Towmotor fork lift truck models are now available with either gasoline or diesel engine. These are the LT-62, LT-60, No. 460 and 480-P. *Towmotor Corp., 1226 E. 152nd St., Cleveland 10, Ohio.*

New Products Briefs . . . . . .

WATER-REPELLENT COATING — Dehydratine No. 22, a new water-repellent coating, contains polysiloxane resins, generally known as silicones, which operate in the principle of negative capillarity. These silicone compounds when applied to a clean, dry continuous masonry surface above grade are said to penetrate more deeply than conventional surface treatments and provide a higher degree of water repellence for a longer period of time. *A. C. Horn Co., Inc., Long Island City 1, N. Y.*

MARKING TAPE—Labelon, a plastic pressure-sensitive marking tape, sticks without moistening to any clean, smooth surface. Any pointed instrument may be used to write on this tape. The writing is protected against dust, dirt, moisture, oil, water, acid and smudging by a transparent plastic outer layer beneath which the writing appears. Temperatures from —40° to 160°F. do not affect Labelon, and it is fadeless. *Labelon Tape Co., Inc., 450 Atlantic Ave., Rochester 9, N. Y.*

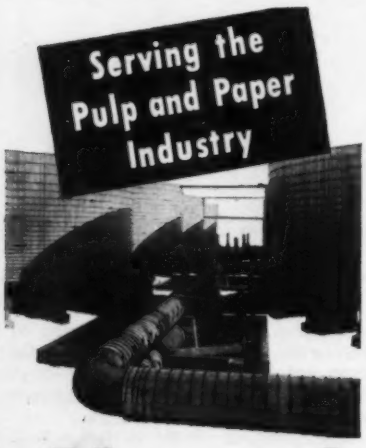
LUBRICANT COATING—"Molynamel," a new lubricant coating, puts a lustrous, hard, greasy-feeling but clean coating on any type of surface, over practically any kind of material. No special equipment is needed to apply this coating; an ordinary brush or spray technique may be used. It is especially effective on porous surfaces, since it fills the pores and provides a feeding supply of lubricant. *Lockrey Co., Lubricants Div., Southampton, N. Y.*

ELECTRIC CONTACT CONTROLLER—A new electric contact controller for solenoid valves, warning signals and motors was recently announced. Vapor actuated, the controller is designed to stand a fairly heavy electrical load. A unique feature is the red and green pilot light to show at a glance the position of the switch. *H. O. Trerice Co., 1420 W. Lafayette Blvd., Detroit 16, Mich.*

STOPCLOCK—This new stopclock for laboratory and industrial applications is claimed to be superior to conventional stopwatches because it frees both hands for necessary manipulation during observations. Known as "Durachron," this stopclock is spring-wound for portability, has a 4-inch diameter dial, and is capable of three different methods of operation as follows: time out operation; straight timing, and snap-back timing. *Andrew Technical Service, 3805 N. Clark St., Chicago 18, Ill.*

BELT LUBRICANT—Packaged in pressure cans, the new spray-type liquid belt Lube is released in a fine mist by simply pressing the nozzle with the finger. The lubricant revitalizes all leather, rubber or fabric transmission belts, restoring flexibility, prolonging life and stopping slippage. *Alexander Bros. Belting Co., Philadelphia, Pa.*

AUTOMATIC CONTROL SYSTEM—Atmospheric condensation affecting damageable items in storage can now be avoided by an automatic control system. This system keeps the temperature of the stored material above the dew point (moisture formation point) of the air. *Foxboro Co., Foxboro, Mass.*



National
WOOD PIPE won't corrode

National Douglas Fir wood stave pipe carries water, acids and pulp in many of the largest pulp mills. They are giving the same high service as when originally installed. Wood tanks and pipe can serve you economically too.

Write today giving details of your project

National Tank and Pipe engineers can work with your staff on the design of wood tanks and pipe to fit your particular needs. Write or wire collect **National Tank and Pipe Company,** Department P, 2301 N. Columbia Blvd., Portland 17, Oregon.

MILL COGS

We make a specialty of "Ready Dressed" cogs which are READY TO RUN the moment driven and keyed. Write for circular "O" and instruction sheets free.

The N. P. BOWSHER Co., South Bend, Ind.

The Paper Industry New Literature

Books

INDUSTRIAL WASTES — THEIR DISPOSAL AND TREATMENT (American Chemical Society Monograph No. 118). Edited by Willem Rudolfs. Published by Reinhold Publishing Corp., 330 W. 42nd St., New York 36, N. Y. 6¼ x 9¼. 497 pages. $9.50.

Written by a group of experts with extensive experience in the treatment of industrial waste materials, this book offers a thorough, up-to-date study of the disposal problems of many industries, including the pulp, paper and paperboard industries.

The monograph begins with a chapter concerning the scope of the industrial waste treatment problem in general, followed by a chapter dealing with the basic principles involved in stream pollution and self-purification of streams. Each of the remaining 15 chapters is classified as to type of industry or character of the wastes, presenting the modern views, theories, methods and applications of waste treatment. The physical, chemical and biological considerations of each type of problem are developed in full detail. Although principal stress is placed on treatment, ample attention is also given to the volumes and characteristics of wastes and the recovery of by-products. The book is supplemented by extensive references to other literature in the field.

The chapter dealing with the pulp, paper and paperboard industries is divided into the following sections: wood preparation; kraft or sulfate mill wastes; sulfite pulping; paper machine overflow waters; deinking waste; strawboard waste; rag, rope, jute and flax pulping; semi-chemical pulping wastes, and bleachery wastes. Eight flow diagrams and 13 tables are included in this chapter.

YEARBOOK OF FOREST PRODUCTS STATISTICS FOR 1952. Published by Forestry Division, Food and Agriculture Organization of the United Nations, Rome, Italy. Distributed in the U. S. by International Documents Service, Columbia University Press, 2960 Broadway, New York 27, N. Y. 8½ x 11. 171 pages. Paper-bound. $2.50.

This sixth yearbook contains new and often provisional information for 1951 and revised data for 1950 from more than 100 countries. It is printed in three languages: English, French, and Spanish. A world map showing countries reporting to FAO, 1950-1951 is shown.

The book discusses the salient features of the world situation in 1951, covering wood in the world economy; roundwood categories; world trade; roundwood utilization; wood consumption; lumber production, exports, imports, stocks and consumption; plywood; sleepers; wood pulp production and consumption, world trade in wood pulp; paper and paperboard, including newsprint and other papers; and fiberboards.

Forty-four tables contain data on roundwood, processed wood, wood pulp and pulp products, world trade, and comparative data. An additional table contains data on roundwood and lumber too late for inclusion in the other tables. Another table gives factors of conversion of currencies into U. S. dollars. Appendices include technical notes, country notes, definition of terms and converting factors.

CHEMICAL PROCESS MACHINERY (Second Edition). By E. Raymond Riegel. Published by Reinhold Publishing Corp., 330 West 42nd St., New York 36, N. Y. 6¼ x 9¼. 735 pages. $12.50.

This new, greatly enlarged volume of Riegel's first edition, "Chemical Machinery," brings the material up-to-date by including latest developments in equipment of the chemical and process industries and dropping all obsolete matter. Scores of new diagrams, photographs and tables make the construction and operation of recently employed machinery readily understandable. (597 figures and over 92 tables are included.)

Listing only equipment now commercially available, the book describes and illustrates such new devices as multispheres and multicylinders, high-speed centrifugal separators and such new or greatly improved equipment as the P-A cyclonic spray tower, the P-A Venturi scrubber, continuous crystallizers, absorption refrigerators, the molecular still and the turbo-drier. Prices are given solely to serve as guides so that the reader can form an idea of the cost of an installation.

New descriptive material is included on distillation and fractionation, the mixing of liquids, new methods for temperature and other measurements and for automatic control, as well as greatly expanded descriptions of evaporators, driers, heating and cooling equipment, pumps and many other important topics.

Booklets and Pamphlets

RELATIVE TOXICITY OF DISINFECTANTS AVAILABLE FOR USE IN THE PULP AND PAPER INDUSTRY. By B. F. Shema and Julian H. Conkey. Published by American Paper & Pulp Association, 122 East 42nd St., New York 17, N.Y. 5½ x 8½. 18 pages. Prepared by the Institute of Paper Chemistry under the auspices of the Biological Control Committee of the APPA, this booklet contains a section on experimental procedure, including discussions on test organisms and test method, and a section on experimental results and discussion. Three tables are given. Table I presents the relative toxicity of various materials to aerobacter aerogenes, bacillus mycoides, aspergillus niger and penicillium expansum. Table II lists the active ingredients and the supplier of the various materials evaluated for their relative toxicity to two species of bacteria and two species of fungi. Table III lists names and addresses of manufacturers and/or formulators of the disinfectants included in this study.

MOTOR AND GENERATOR REFERENCE BOOK. Published by Allis-Chalmers Mfg. Co., 991 S. 70th St., Milwaukee, Wis. 8½ x 11. 50 pages. This booklet is a reprint of a section of the "Electrical Reference Book," published by the Electrical Modernization Bureau and edited by Mr. E. S. Lincoln. Allis-Chalmers sponsored this section of the book. It is a brief outline of information that will assist in the selecton of motive power to handle most industrial applications.

IN THE CLEAR. Published by National Safety Council (in cooperation with British Columbia Forest Products, Ltd.), 425 N. Michigan Ave., Chicago 11, Ill. 4½ x 8. 8 pages. This job training booklet shows the safe way to handle logs. Safety rules covering the principal hazards of the industry are presented in easy-to-understand copy illustrated with humorous cartoons. The safe way to handle axes and saws and set chokers is shown. Helpful hints on lifting heavy objects and working around machinery are included.

SUPPLEMENTARY LIST OF PUBLICATIONS OF THE NATIONAL BUREAU OF STANDARDS, July 1, 1947 to June 30, 1952 (Supplement to Circular 460). Published by National Bureau of Standards, U.S. Department of Commerce, Washington 20, D.C. 223 pages. 75 cents. (Order from Government Printing Office, Washington 25, D.C.). This supplement presents a complete list of the Bureau's publications, with brief abstracts, issued during the period July 1, 1947 to June 30, 1952. It includes subject and author indices and general publications information.

STANDARDS FOR STEAM SURFACE CONDENSERS. Third edition. Published by Heat Exchange Institute, 122 East 42nd St., New York 17, N.Y. 8½ x 11. 20 pages. $2.00. This is a revision of the booklet on the same subject issued in 1939 and 1940. It contains sections on nomenclature, definitions, condenser performance, materials and details of construction, surface condenser sizes, vacuum pump capacity, and atmospheric relief valve sizes. A diagram of a condenser, graphs, and tables are included.

Manufacturers' Publications

Through the co-operation of manufacturers and suppliers, THE PAPER INDUSTRY *lists the following catalogues, bulletins and booklets. They may be obtained without cost or obligation, unless otherwise specified, by writing direct to the manufacturers. Please address requests on your company letterhead.*

Screw Pumps. Sier-Bath Gear & Pump Co., Inc., 9252 Hudson Blvd., North Bergen, N.J.—Photographs, features, and advantages of a complete new line of Sier-Bath screw pumps are given in this reply sheet. The other side of the sheet contains a form to be filled out and sent to Sier-Bath so that they may help you solve your pumping problem.

Centrifugal Pumps. Allis-Chalmers Mfg. Co., 991 S. 70th St., Milwaukee, Wis.—4-page Bulletin 52B6691A describes frame-type centrifugal pumps designed to handle most ordinary pumping jobs requiring capacities up to 500 gpm and heads as high as 135 ft. Cross section diagrams of the three available types of frame-type centrifugal pumps, together with dimensions and performance curves, are included.

Plant Location. Walter Kidde Constructors, Inc., 140 Cedar St., New York 6, N.Y.—"Factors Influencing Industrial Plant Location" is the title of a new 12-page booklet containing a compilation of 64 basic questions which management must answer and evaluate in order to select the best site for a new plant. In the section on procedure, the booklet discusses in detail preliminary steps required in a plant location project. Subjects covered in the main section of the booklet include production materials, marketing, transportation and distribution, labor, supervision, utilities, service and fuels, bank facilities, laws and taxes, community attitude towards industry, living conditions, climate, national defense, and site characteristics.

Plastic. New York Belting & Packing Co., 1 Market St., Passaic, N.J.—"Indestructible" plastic, which is available as pipe moldings, extrusions, or fabrications, is described in a new booklet.

Boiler. Kewanee-Ross Corp., Kewanee, Ill.—4-page Catalogue 88 illustrates and describes the Kewanee Square-Heat boiler for oil, gas or stoker firing. A complete description of quality features, as well as a detailed listing of ratings, dimensions, equipment and trims, is included.

Sheaves. Allis-Chalmers Mfg. Co., 991 S. 70th St., Milwaukee, Wis.—This new 4-page leaflet, No. 20S7811, gives dimensions and engineering information on wide-range, stationary-control "Vari-Pitch" sheaves equipped with a new type "Magic-Grip" bushing for use with "Q" or "R" section belts. Factors governing proper selection of a wide-range "Texrope" drive using the "Vari-Pitch" stationary-control sheave are fully explained.

Minimizing Undesirable Coagulation. Antara Chemicals Div., General Dyestuff Corp., 435 Hudson St., New York 14, N.Y.—"Trouble Shooting with Blancol" is the title of a new 9-page booklet describing the use of Blancol concentrated powder and Blancol concentrated fine powder N in processing pulp and paper.

Purifiers. V. D. Anderson Co., Purifier Div., 1935 W. 96th St., Cleveland 2, Ohio—8-page Bulletin No. 501 describes small line-type purifiers. Installation photos illustrate equipment arrangement and a blueprint drawing shows piping layouts. The drawings, selection tables, dimensions, capacities and prices are very helpful to those planning installations of Hi-eF purifiers.

Polyethylene Glycols. Carbide & Carbon Chemicals Co., 30 East 42nd St., New York 17, N.Y.—"Carbowax Polyethylene Glycols" (F-4772), a new 50-page booklet, describes, with the aid of many formulas, the varied uses of the water-soluble liquid and solid polyethylene glycols and the methoxy polyethylene glycols in various industries, including the paper industry. A section on physical properties, employing tables and charts, characterizes these interesting compounds. Shipping and storage data for these compounds are also presented. Also included is a section devoted to the technical and U.S.P. specifications of the polyethylene glycols as they are shipped by Carbide & Carbon. Complementing these specifications are complete and detailed descriptions of the test methods recommended by the company to assure that the commercial material meets the specifications listed.

Tubes & Welding Fittings. Globe Steel Tubes Co., Milwaukee 46, Wis.—12-page Bulletin 103-Z presents technical data on tubing and welding fittings.

Flow Indicators. Schutte & Koerting Co., Dept. M-B, Cornwells Heights, Bucks County, Pa.—Designated as Bulletin 18-W, this publication describes flow indicators, giving operation, application, and specifications of the various types. Many tables, photographs and drawings are included, in addition to performance curves. General design features and materials of construction are listed.

Fork Trucks. Lewis-Shepard Products, Inc., 125 Walnut St., Watertown, Mass.—This electric fork truck comparison chart lists 27 points of comparison. Space is provided in which to compare the fork trucks of Lewis-Shepard with those of two other manufacturers.

Electric Control Thermometers. Minneapolis-Honeywell Regulator Co., Industrial Div., Wayne & Windrim Aves., Philadelphia 44, Pa.—Catalogue 6482, containing 10 pages, describes recording and indicating circular case electric control industrial thermometers used for temperature control on drying ovens, cooking kettles, lumber kilns and plating tanks. Information on available switching action, chart and scale ranges, dimensions and bulb and tubing variations is included.

Tubing. Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.—4-page Technical Data Card 143 is a new bulletin which discusses two stainless tubing steels: Croloy 12 (12 per cent chromium steel—AISI Type 410) and Croloy 12-2 (12 per cent chromium, 2 per cent nickel steel—AISI Type 414). Included are condensed technical data on corrosion resistance, mechanical properties, forging, machining, welding, heat treatment, and physical properties.

Time-Cycle Controllers. Bristol Co., Waterbury 20, Conn.—A new 12-page bulletin, No. C305, gives information on the application of time-cycle controllers in timing industrial process operations. The bulletin illustrates the various models available and describes the principle of operation in detail.

Masonry Waterproofing. L. Sonneborn Sons, Inc., Building Products Div., New York 11, N.Y.—Technical Data Guide No. 44, "Waterproofing—Exterior, Above Grade—Concrete and Masonry Surfaces," describes "Hydrocide SX-2210, explaining what it is and how it functions; what it does and will not do. Also included is a summary of performance test data and a description of how Hydrocide SX-2210 is used.

Tapes. Ideal Industries, Inc., Sycamore, Ill.—4-page Form No. P-1 gives complete description and specifications of Ideal friction tape, rubber tape, and plastic electrical tape.

Electro-Analyzer. Eberbach Corp., Ann Arbor, Mich.—Bulletin 390, containing 4 pages, presents a complete description of the ultra-speed electro-analyzer.

Materials Handling. Towmotor Corp., 1226 E. 152nd St., Cleveland 10, Ohio—How inefficient materials handling severely handicaps successful production is effectively dramatized in a new booklet with an unusual Western motif. Titled "How to Catch Man-Hour Thieves," this booklet covers both the five major causes of heavy man-hour losses and the four basic plant operations in which such losses are most often sustained. Procedures proved most effective in combating these man-hour losses are also detailed.

Centrifugal Pumps. Allis-Chalmers Mfg. Co., 991 S. 70th St., Milwaukee, Wis.—"Handy Guide to Selection of Centrifugal Pumps" is the title of Bulletin 52C6059J, containing 12 pages. In addition to covering general purpose, double suction, multistage, special purpose, marine and mixed and axial flow pumps, the bulletin has a head-capacity table for single stage, double suction pumps. Special purpose pumps mentioned include solids handling, paper stocks, sewage, rubber-lined, process, fractional horsepower and coolant and circulating units.

Sheave Unit. Allis-Chalmers Mfg. Co., 991 S. 70th St., Milwaukee, Wis.—Features of a new "D" section, integral-shaft type motion-control "Vari-Pitch" sheave are described in the 4-page leaflet, 20S7897, which carries drawings of the 8 and 12-grove units, together with a table of dimensions.

Lubricant. Sun Oil Co., Philadelphia 3, Pa. "Sunep," an extreme-pressure lubricant for high-output industrial gearing, is described in a new 12-page folder, which outlines the lubricating problems faced by industrial plants in stepping up production with existing equipment and tells how "Sunep" helps to solve them.

Temperature Regulators. Farris Stacon Corp., 521 Commercial Ave., Palisades Park, N. J.—8-page Bulletin No. ST162 describes the complete new line of Series "V" temperature regulators. Principles of operation and typical uses of the direct acting (for heating applications) and reverse acting (for cooling applications) types are presented. The features of these regulators are enumerated and illustrated. Specifications of the various types are included. Accessories for the Series "V" regulators are described and illustrated. A section on how to select Series "V" regulators, containing six tables, and formulas, is included.

Centrifugal Pump. Carver Pump Co., Muscatine, Iowa—A new 4-page bulletin (No. 151) on a newly designed 1½ in. self-priming centrifugal pump has recently been issued. Some of the uses of this pump are listed and illustrated. The many features of this pump are also listed, together with a photograph of the pump, and specifications are given.

Magnetic Impulse Rapping System. Research Corp., Bound Brook, N. J.—6-page Bulletin MI presents illustrated information on the recently developed magnetic impulse continuous electrode rapping system for electrostatic precipitators. Operation of this system is explained with circuit diagrams and photographs of major components in the new bulletin, which also contains a summary of exclusive magnetic impulse rapper features.

Herringbone Gear Drives. Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill.—A new 36-page publication (Book No. 2519) offers detailed information about single, double and triple reduction enclosed herringbone gear drives. Installation photographs show examples of these drives in many types of heavy-duty service. The horsepower rating tables contain many new ratios. Complete instructions for correct selection are provided, including new overhung load tables and a table listing load classes for 170 types of machines. Standardized packaged drives are listed with dimensions and NEMA motor frame numbers.

Deaerating Heater. Graver Water Conditioning Co., Dept. 32-0, 216 West 14th St., New York 11, N. Y.—A new development in deaerating heaters for the smaller boiler plants is described in 4-page Bulletin WC-110. This development is a compact "package type" heater, completely equipped with all accessories. A cutaway drawing of the tank, with the various parts labeled, is given. Features, sizes, capacities, dimensions, construction and accessories are all covered. Three installation photographs are included.

Controllers. Minneapolis-Honeywell Regulator Co., Industrial Div., Station 64, Wayne & Windrim Aves., Philadelphia 44, Pa.—Catalogue 1530, "ElectroniK Controllers," comprises 56 fact-filled pages, describing all types of ElectroniK control instruments which are used to measure and control a multiplicity of process variables. Included are detailed specification and control action descriptions and ratings for both electric and pneumatic-type controllers. The literature also presents engineering data on the Electr-O-Line and Electr-O-Pulse electric control relays.

Paper Mill Rolls. B. F. Goodrich Co., Akron, Ohio—6-page Catalogue 9700 on paper mill rolls features Goodrich's patented, steel-jacketed Vulcalock press rolls which require no hard rubber base. The catalogue describes materials and methods used in construction of

Save Man Hours
Equip Your Digester House with a

HUMPHREY

Employees' Manlift

ELEVATOR

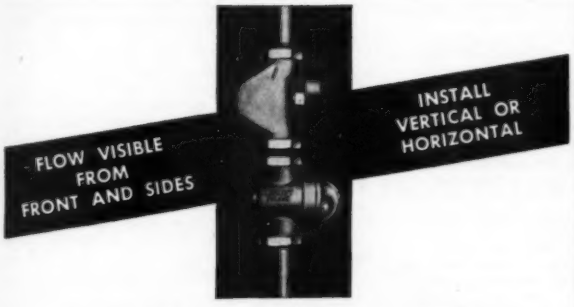
Eliminate stair climbing—save time—reduce employee fatigue. The endless belt provides continuous up and down transportation to and from sampling and operating floors.

Easy and safe to operate with ready-at-hand stop and go controls and the exclusive Humphrey Safety Features.

Can be installed in any Multiple Floor Building

Send us your requirements . . . we'll furnish complete information and prices.

HUMPHREY ELEVATOR CO., Inc. • Since 1887
821 Division Street • Faribault, Minnesota



A SIGHT-FLOW INDICATOR THAT NEVER CLOUDS OVER

The Midwest Ball Sight-Flow is the one and only dryer condensate indicator with a "Window" that really stays clear—is constantly being scoured and kept clean by the violence of the liquid as it passes. The thousands already in use on both wet and dry end dryers prove that statement.

Equip your dryers, particularly the wet end section, and keep tab on condensate flow. Add Midwest non-corrosive temperature indicator to spot subnormal temperatures.

Sight-Flow fitting all bronze and non-corroding. Glass ball of heavy Pyrex glass and replaceable. Assembly effective for steam pressures up to 75#. Standard pipe sizes ½", ¾", 1", 1½". Temperature indicator also non-corroding.

Order several now and you'll order more later.

MIDWEST • FULTON MACHINE COMPANY
DAYTON, OHIO

HOW PRUDHOMME LAKE WATER IS MADE CLEAR

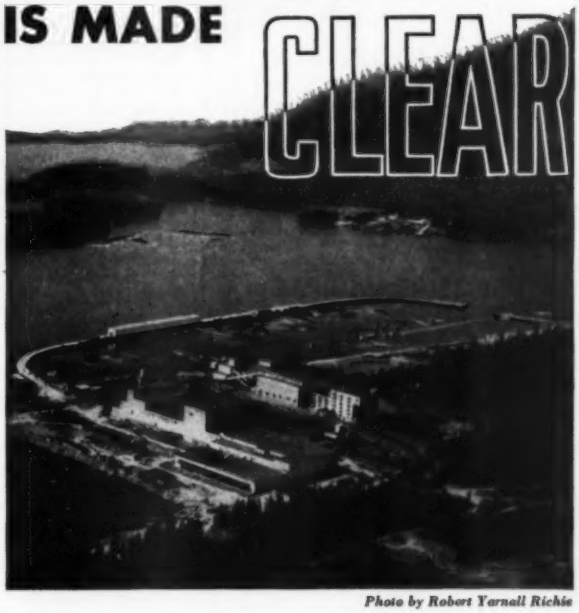


Photo by Robert Yarnall Richie

—for Columbia Cellulose

Prudhomme Lake water at Prince Rupert, B. C., has a very high color ranging from 40 to 105 ppm, making it unsuitable for cellulose pulp production without treatment.

Columbia Cellulose Company, Limited, very effectively reduces this color to between 0 and 2 ppm with four Permutit horizontal Precipitators and twelve gravity filters. The crystal clear effluent is ideal for the high alpha cellulose pulp produced by Columbia.

Because of the extremely efficient action of the Precipitator, filter loads are greatly reduced. This permits long runs between backwashings . . . assures low costs. Upward filtration of treated water through a blanket of sludge in the Precipitator holds chemical dosages to a minimum.

Permutit know-how and equipment can help you to produce finer pulps and papers at lower costs—regardless of raw water conditions. For full information, please write to THE PERMUTIT COMPANY, Dept. PI-7, 330 West 42nd Street, New York 36, N. Y., or Permutit Company of Canada, Ltd., 6975 Jeanne Mance Street, Montreal.

PERMUTIT®

WATER CONDITIONING HEADQUARTERS FOR OVER 40 YEARS

The Paper Industry
Professional and Business Services

Engineers
Industrial Plants • Textile & Paper Mills • Location Studies • Appraisals • Reports • Surveys
J. E. SIRRINE COMPANY
GREENVILLE SOUTH CAROLINA

main and primary press rolls, soft rubber covered top press roll, zero density top press roll, top press roll for first press nine point straw, top press roll for suction press on straw board, size press roll, Duk-bak table rolls, couch rolls, coating roll, wire and felt rolls, worm top squeeze roll and spread roll. A special section tells how to order covers and cores and how to prepare the core and describes the approved method for roll storage.

Loader. Evans Products Co., Plymouth, Mich.—A new 24-page booklet, both a handbook and a descriptive brochure, describes the DF loader, a load-locking, load-securing device installed in box cars. Photographs show how the loader components can be used to accommodate almost any kind of load normally carried in a box car. Case histories are cited from shippers of many different types of materials, including paper.

Vertical Motors. U. S. Electrical Motors, Inc., Box 2058, Los Angeles 54, Calif.—Users of deep well turbine pumps will find many interesting developments in vertical motor design in this 16-page bulletin featuring U. S. Verticlosed motors. Numerous design improvements are presented. The bulletin illustrates the motor, with accompanying drawings of individual features in full color. Engineering data includes discussions of tandem bearings, dual balancing of rotors and the complete motor assembly, use of automatic backstops (two types), comparisons of solid shaft and hollowshaft designs, description of two types of lubrication and progressive views of pump motors, showing their continuous improvement during the past 40 years.

Pneumatic Controller. Fischer & Porter Co., 6890 Jacksonville Rd., Hatboro, Pa.—Catalogue C-50, consisting of 20 pages, describes a completely new P-4 Pneumatrol pneumatic controller for rate of flow, differential pressure, liquid level, viscosity, pressure, and temperature applications. This catalogue describes in detail the action and components of this controller. Numerous schematic drawings and diagrams, cross-section drawings, and photographs are included.

Conveyor. Rapids-Standard Co., Inc., 342 Rapistan Bldg., Dept. FV-53, Grand Rapids 2, Mich.—A 4-page illustrated bulletin detailing applications and specifications of the Rapistan Floor-Veyor belt conveyor is now available. The bulletin has photographs and descriptions of typical uses and features of the belt unit. Specifications and features of the Floor-Veyor are presented in clear, easy-to-read chart and table form. Sketches are used to show recommended installation procedures and to point out each part of the unit.

Diesel Engines. Harnischfeger Corp., P & H Diesel Div., Crystal Lake, Ill.—This new 28-page pocket size booklet entitled, "What You Should Know About Diesel Engines," is written in simple, non-technical language. It uses the grade school "primer" technique for both telling and illustrating the diesel story. The booklet records the diesel engine's invention and early development; compares it with the gasoline engine; tells about the 2-cycle and 4-cycle types of diesels; explains its operation in simple pictures and words, and reports latest advancements in modern diesel engine design.

Recorder Controller. Foxboro Co., Foxboro, Mass.—16-page Bulletin 465 describes the restyled Foxboro circular case controller. Showing typical applications in various industries, the bulletin discusses each unit of a pneumatic control system. A section of installation diagrams and text is devoted to on-off and proportional control, explaining how to select the appropriate controller action to match the demands of a process. Instrument components and their individual functions in the control of such equipment as kilns and dryers are thoroughly covered. A 2-page data section analyzes the four classes of measuring systems available for automatic temperature control. Measuring elements for automatic pressure control are also shown. Other pages feature indicating controllers, Rotax electric controllers, chart records, instrument specifications and mounting dimensions.

Dust Collectors. Prat-Daniel Corp., 2 Meadow St., South Norwalk, Conn.—This 8-page catalogue illustrates and describes Design 4P dust collectors. Contents include a discussion of the problems of fly ash collection and the Design 4P tubular collector. Efficiency curves, arrangements, and standard dimensions are given. Flue gas density tables are included, with a formula and nomograph for calculating the number of tubes required for any volume and resistance.

Portable Compressors. Ingersoll-Rand Co., 11 Broadway, New York 4, N.Y.—Three new 4-page bulletins (Forms 2314, 2315, and 2316) describe the "Gyro-Flo" 105 cfm, 210 cfm, and 315 cfm portables using the advanced-design rotary compressor. A description of operation, advantages, and specifications are included.

Tubing. Flexible Tubing Corp., Guilford, Conn.—Flexible tubing for ventilation, fume and dust removal, and materials handling is described in a new 8-page bulletin, C2-4. Detailed information on Spiratube A and Spiratube R, two types of highly flexible lightweight tubing made from continuous helical coils of spring wire wound with overlapping plies of specially treated multi-coated fabric, is given. The bulletin also describes Flexflyte, smaller diameter tubing for the same uses as Spiratube. It contains detailed specifications, air friction charts, data on oil and chemical resistance, and application information.

Continuous Wide Chart Recording. Minneapolis-Honeywell Regulator Co., Industrial Div., Wayne & Windrim Aves., Philadelphia 44, Pa.—2-page Instrumentation Data Sheet No. 9.1-13 describes the use, operation, and advantages of continuous wide chart recording of alternating voltage or current through the use of an ElectroniK strip chart recording potentiometer, together with a Weston thermal converter. Illustrations and dimensional drawings of all units are included.

Explosion-proof Motors. Louis Allis Co., Milwaukee 7, Wis.—Known as No. 800, a new 12-page bulletin, covering Louis Allis' line of explosion-proof motors, shows in detail the special features built into these motors and typical uses for these units. It also shows many of the various electrical and mechanical modifications available.

Trucks & Cranes. Baker-Raulang Co., Industrial Truck Div., 1230 West 80th St., Cleveland 2, Ohio—Catalogue 54, consisting of 8 pages, describes and illustrates Baker-Raulang's line of industrial trucks and cranes. One section outlines the step-by-step procedure for making the most logical fork truck choice. Specification charts and photographs are used to fully describe each model. Also illustrated are the important construction and design features of Baker trucks, and the latest fork truck attachments available for Baker equipment.

Speed Recorders. Metron Instrument Co., 432 Lincoln St., Denver 9, Colo.—Technical Data Sheet No. 81M describes Series 81M speed recorders, giving the purpose, typical applications, outstanding features, and a description of these speed recorders. A section on the selection of a proper recorder is also included, in addition to sections on installation and use, ordering instructions, price and terms, a table on recorder speed range markings and a table on selection of units other than rpm.

V-Belts. Allis-Chalmers Mfg. Co., 991 S. 70th St. Milwaukee, Wis.—High-capacity "Texrope" V-Belts for tough jobs are described in 4-page Bulletin 20B7786.

Corrosion Resistant Equipment (Film). National Carbon Co., Div. of Union Carbide & Carbon Corp., 30 East 42nd St., New York 17, N.Y.—Two sound color motion pictures titled "Meeting the Challenge" and "By Way of Experience" describe and demonstrate the nature, uses and practical installation of "Karbate" impervious graphite corrosion resistant equipment. The first film, which has a running time of 14 minutes, deals with equipment design and process application, while the second film, which has a running time of 12 minutes, depicts proper installation and maintenance techniques.

Sorbitol. Atlas Powder Co., Wilmington 99, Del.—Application data and chemical characteristics on sorbitol, a polyol, as used by many process industries, are described in a new 24-page, digest size booklet entitled "The Sorbitol Story." Tables, charts and text define the composition and properties of various sorbitol products. The booklet also discusses their uses in formulations employed by the chemical process industries.

Tube Fittings. Special Screw Products Co., 5445 Dunham Rd., Bedford, Ohio—A complete new, dual-purpose catalogue (K-151), combining both parts specifications and technical data, is now available. The parts listings include detailed specifications on over 500 stainless steel fittings for tube sizes ranging from ⅛ in. to 1 in., while the technical information covers performance data, test results, and recommended installation procedures.

Elapsed Time Controllers. Foxboro Co., Foxboro, Mass.—Technical Information Sheet TI 33-A-68a covers operation of Model 40 elapsed time controllers. The instrument is described in its two major forms: controlling total "rise" and "hold" time, and controlling "hold" time only. Diagrams illustrate the standard operating cycles for each form of elapsed time control. The various types of control action obtainable with pneumatic or Rotax electric mechanisms are listed under general instrument specifications, in addition to suggested measuring systems, time scales and timer features. Separate sections explain the operation of a combined schedule timer and time can, Batch Stabilog control, and auxiliary timing equipment. Control and timing units are identified in an internal view of an elapsed time controller, showing the timer scale, setting index, Rotax electric contacts and timing motor relay.

Illuminator For Steam Gages. Jerguson Gage & Valve Co., 80 Fellsway, Somerville 45, Mass.—A 2-page data sheet (Unit No. 196) describes mercury vapor illuminators for steam gages.

Liquid Shock Absorbers. R-S Products Corp., 4530 Germantown Ave., Philadelphia 44, Pa.—2-page Bulletin No. 38 describes the R-S Heyden shock absorber and excess pressure eliminator, illustrating and giving dimensions of five models: junior, domestic, industrial, dual, and super.

Wiring Diagrams For Starting Switches. Allen-Bradley Co., Milwaukee 4, Wis.—A 24-page wiring diagram bulletin, describing the many ways that the Allen-Bradley Bulletin 709 magnetic across-the-line starter can be applied, is now being offered. Illustrated are both wiring diagram symbols and line diagram symbols, and wiring systems for various across-the-line starter applications. Each wiring system in this bulletin is shown in two ways: there is a "wiring diagram" and below it a "line diagram." Wiring diagrams are shown for all sizes of starters.

Gear Drive. U. S. Electrical Motors, Inc., P. O. Box 2058, Los Angeles 54, Calif.—This 8-page bulletin, in full color, describes in detail a new "Holloshaft" gear drive to operate turbine pumps where electricity is not available. Cutaway views show many new features.

BE WIS-WISE *use*

PERFECT SURFACE WIRES

FOR PERFECT PERFORMANCE

Expertly made with finest precision equipment from extra select wire. Backed by years and years of experience is your assurance of the very best.

WISCONSIN WIRE WORKS
APPLETON, WISCONSIN
© 1953

SULPHITE MILL ACID PLANTS

Sulphur Burning Plants • Jenssen Two Tower Acid Systems • Gas Coolers—Surface and Spray Type • Jenssen Pressure Acid Systems • Jenssen Auxiliary Process Towers • Recovery Plants—Cooking Acid

SOLUBLE BASE ACID PLANTS
SEMI CHEMICAL PLANTS
JENSSEN SO_2 ABSORPTION SYSTEMS

FOR BLEACH PLANT APPLICATION
SULPHUROUS ACID PREPARATION

G. D. JENSSEN CO., INC.
WATERTOWN, NEW YORK

WESTERN REPRESENTATIVE:
JAMES BRINKLEY COMPANY, Seattle, Washington
FOUNDED 1915

WE SELL PAPER *AND GIVE SERVICE!!*

. . . Converting Specialists . . .

KRAFT • NEWS • BOARD • BOOK • TISSUE
SPECIALTIES • CUTTING • SLITTING • SHEETING • REWINDING

G. B. GOLDMAN PAPER CO.

Third & Wood Sts. Market 7-6050 Philadelphia, Pa.

JOB LOT BUYERS OF ALL PAPER ITEMS

Have You Seen

our list of books for papermakers? All shipments postpaid. For information write:

The PAPER INDUSTRY
431 S. Dearborn St., Chicago 5, Ill.

CONFIDENTIAL EMPLOYMENT SERVICE

For paper mills, pulp mills, and paper converting plants. Serving employers seeking executives and executives seeking positions. We welcome your inquiries.

CHARLES P. RAYMOND SERVICE, Inc.
Phone LIberty 2-6547 — 294 Washington St. — Boston 8, Mass.

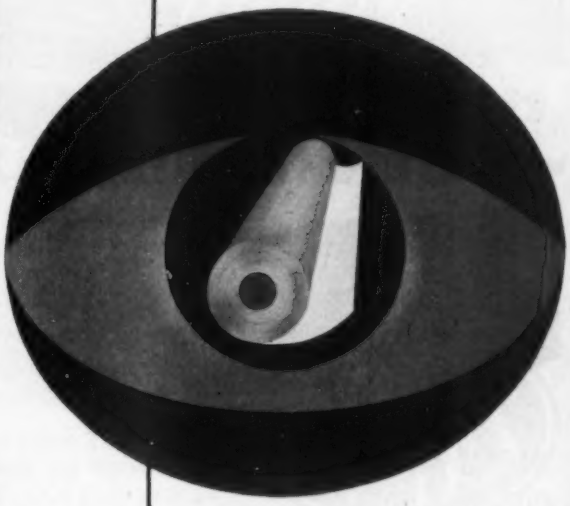
WANTED—PAPER MILL MANAGER

To take full responsibility of a one-machine operation. Age 35 to 45. College engineering training desirable. Proven record of supervisory ability and record of good labor relations required. Good opportunity for capable and experienced man. Retirement and group insurance provided. Our employees know of this ad. All replies will be held in strict confidence. Submit complete resume of training, experience, salary earned and expected to Box 553, The Paper Industry.

FOR SALE

Two Dilts Classifiners, one new, one used, complete with motors and drives. Address: Box 554, The Paper Industry.

Appleton Felts



make good paper

APPLETON WOOLEN MILLS

APPLETON • WISCONSIN

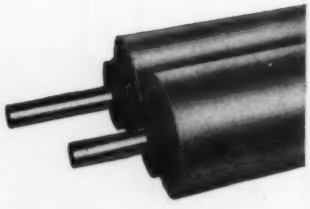
Shaf-Tite® Rolls

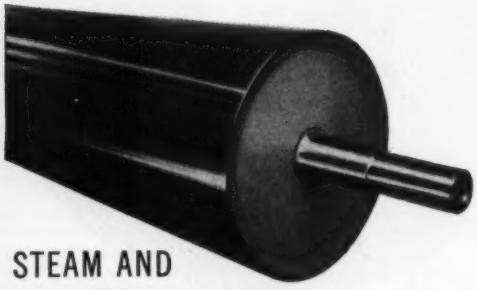
for the

PAPER INDUSTRY

FELT ROLLS

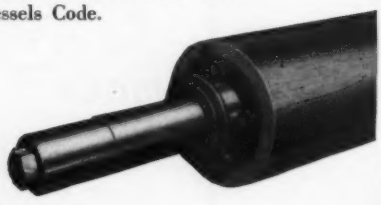
Solid wood wet felt rolls 4" to 9" diameter. Kiln-dried wood rolls 4" to 12" diameter. Rubber, brass, steel, aluminum and stainless steel felt rolls.





STEAM AND COOLING ROLLS

Steel or chromium plated: usual sizes 6½" to 20" diameter. Built to the specifications of the ASME Unfired Pressure Vessels Code.



PRESS ROLLS

Solid maple, rubber and stainless steel.

TABLE ROLLS

Rubber, brass and stainless steel.

FREE! Send for 64-page catalog. Permanent reference work for all rolls. Includes inquiry dimension sheets, care of wood and rubber rolls, and engineering data. RODNEY HUNT MACHINE CO., 38 Maple St., Orange, Mass., U.S.A.

RODNEY HUNT

INDUSTRIAL ROLL DIVISION

Manufacturing Engineers Since 1840

MARKET QUOTATIONS

RAGS (Domestic)

NEW RAGS

The following are quotations to mills, f.o.b. New York:

No. 1 White Shirt Cuttings	13.50 to 14.00
New Unbleached Muslins	14.50 to 15.00
Fancy Shirt Cuttings	6.75 to 7.00
No. 1 Percales	6.75 to 7.00
No. 1 Washables	3.75 to 4.00
No. 1 Light Silesias	8.00 to 8.50
No. 1 Light Prints	6.25 to 6.50
Light Flannelettes	8.00 to 8.50
Cottonades	4.00 to 4.25
Blue Overalls	7.00 to 7.50
Blue Cheviots	7.00 to 7.50
Canton Flannels, Bleached	11.00 to 11.50
Canton Flannels, Unbleached	11.00 to 11.50
Osnaburg Cuttings	8.00 to 8.50
Underwear Cuttings, Bleached	14.50 to 15.50
Underwear Cuttings, Unbleached	14.50 to 15.50
Khaki Cuttings—	
Sun Tan	8.50 to 9.00
Mixed	4.00 to 4.25
Linen Cuttings—	
American	8.00 to 8.50
White	14.00 to 15.00
Grey	14.00 to 15.00

RAGS (Domestic)

OLD RAGS

Quotations to consuming mills, dollars per hundred pounds, f.o.b. New York, follow:

	per cwt.	
Roofing—		
No. 1	1.25 to	1.35
No. 2	.95 to	1.05
No. 3 and 4	.80 to	.90
Twos and Blues—		
Repacked	2.25 to	2.50
Thirds and Blues—		
Repacked	2.00 to	2.25
Miscellaneous	1.75 to	2.00
Whites, No. 1—		
Repacked	5.50 to	5.75
Miscellaneous	4.75 to	5.00
White, No. 2—		
Repacked	4.50 to	4.75
Miscellaneous	3.75 to	4.00

RAGS (Foreign)

ex dock New York City

NEW RAGS

per cwt.

New Dark Cuttings
New Mixed Cuttings
New Light Silesias
Light Flannelettes
Unbleached Cuttings
New White Cuttings
New Light Oxfords
New Light Prints
} Nominal

RAGS (Foreign)

ex dock New York City

OLD RAGS

per cwt.

No. 1 White Linens
No. 2 White Linens
No. 3 White Linens
No. 4 White Linens
No. 1 White Cottons
No. 2 White Cottons
No. 3 White Cottons
No. 4 White Cottons
Extra Light Prints
Ord. Light Prints
Med. Light Prints
Dutch Blue Cottons
French Blue Cottons
French Blue Linens
Checks and Blues
Linsey Garments
Dark Cottons
Old Shopperies
} Nominal

ROPE and BAGGING

f.o.b. and ex dock New York City

	per cwt.	
Gunny No. 1—		
Foreign	4.75 to	5.00
Domestic	4.75 to	5.00
Wool Tares—		
Light	5.50 to	5.75
Heavy	5.75 to	6.00
No. 1 Scrap Bagging	4.25 to	4.50
Manila Rope—		
No. 1 large	7.00 to	7.50
No. 1 small	6.00 to	6.50
Sisal Rope—		
No. 1 large	6.00 to	6.25
No. 1 small	5.50 to	5.75
New Burlap Cuttings	6.50 to	7.00
Jute Threads—		
Foreign (Nom.)	6.75 to	7.25
Domestic	6.75 to	7.25
Strings—		
No. 1 sisal	5.50 to	5.75
No. 2 sisal	5.00 to	5.25
Soft jute	5.25 to	5.50
Mixed	3.00 to	3.25

WASTE PAPER

The following are quotations, dollars per ton, for No. 1 packing f.o.b. New York:

	per ton	
Shavings—		
Hard White Env. Cuts	115.00 to	125.00
Hard White No. 1	85.00 to	90.00
Soft White, one-cut	70.00 to	75.00
Soft White, No. 1	55.00 to	60.00
Coated Soft	40.00 to	45.00
Fly Leaf No. 1	25.00 to	30.00
Fly Leaf, Woody No. 1	25.00 to	30.00
No. 2 Mixed Col. Woody	20.00 to	25.00
Flat Stock—		
No. 1 Heavy Books and Magazines, Repacked	20.00 to	22.00
Mixed Books	14.00 to	15.00
Ledger Stock—		
No. 1 White	55.00 to	60.00
No. 1 Mixed (Colored)	35.00 to	40.00
Manilas—		
New Env. Cuttings	65.00 to	70.00
New Env. Cuts, One-Cut		
Extra Manilas	22.50 to	25.00
Manila Tab Cards, Free of Ground Wood	65.00 to	70.00
Colored Tab Cards	45.00 to	50.00
Kraft—		
New Envelope Cuttings	65.00 to	70.00
Tripled Sorted No. 1 100%	35.00 to	40.00
No. 1 Old Assorted	27.50 to	32.50
News—		
White Blank	55.00 to	60.00
Overissue	22.00—	
No. 1 Folded	15.00—	
Old Corrugated Containers	22.00—	
New Jute Corrugated Cuts	26.00—	
Mill Wrappers	14.00—	
Box Board Chips	11.00—	
No. 1 Mixed Paper	10.00—	

CHEMICALS

f.o.b. shipping point

Alum (Papermakers)—		
Lump, cwt.	4.55—	
Ground, cwt.	3.85—	
Powdered, cwt.	4.70—	
Blanc Fixe—		
Pulp, bulk, ton	100.00—	
Dry, barrels	105.00—	
Bleaching Powder—		
Drums, cwt.	5.00 to	6.00
Casein (Domestic Standard)		
20-30 mesh (bags), lb.		
80-100 mesh (bags), lb.	28.00—	
Argentine, lb.	17.00 to	17.50
China Clay—		
Domestic Filler Bulk (mine) ton	10.00 to	15.00
Domestic Coating Bulk (mine) ton	17.00 to	25.00
Imported (ship side) Bulk (lump) ton	22.00 to	30.00
Chlorine—		
Tanks cars (wks) cwt.	2.90—	
Gelatine (silicin), lb.	1.25 to	1.35
Glyc. (C.P.) drums, lb.	44.00 to	44.50
Litharge, powd. bbl. lb.	.15¾ to	.16¼

MARKET QUOTATIONS

	New York, per 100 lbs.
Basin (Gum)—	
E	8.30—
F	8.30—
G	8.30—
WW	8.50—
Basin (Wood), carlots, F.O.B. South	6.50—
Salt Cake—	
Dom. bulk (wks) ton	19.00 to 23.00
Imp. bulks on dock—(Atl. ports) ton (Nom.)	22.00—
Soda Ash—	
Bulk (works) cwt.	1.45—
Paper bags, cwt.	1.65—
Soda (Caustic)—	
Solid drums, cwt.	3.70 to 4.45
Ground and flake, drums, cwt.	4.10 to 4.85
Sodium Silicate—	
60 deg. 55 gal. drums, (works) cwt.	1.60 to 1.70
40 deg. 35 gal. drums, (works), cwt.	1.30 to 1.40
Starch—	
Pearl, 140 lb. bags, cwt.	6.39—
Pearl, barrels, cwt.	6.39—
Paper (Sp.) bags, cwt.	6.39—
Powdered, barrels, cwt.	6.60—
Sulphur (Crude)	
(Mine) bulk, long ton	25.50 to 27.50
Talc—	
Dom. 100 lb. bags (mine) ton	35.00 to 38.00
Canadian	35.00 to 45.00
Titanium Dioxide—	
Barium Pig, bbls., lb.	.21 to .21½
Calcium Pig, bbls., lb.	.21 to .21½
Zinc Sulphide, bbls., lb.	11.50 to 11.75

WOOD PULP

Quotations on domestic and Canadian wood pulp, dollars per short air dry ton, delivered consuming mills including basic freight allowances, follow:

Bleached Sulphite	140.00—
Bleached Sulphite, Canadian	140.00—
Unbleached Sulphite	120.00—
Unbleached Sulphite, Canadian	120.00—
Bleached Soda	140.00—
Bleached Soda, Canadian	140.00—
Kraft, Bleached	145.00—
Kraft, Bleach., Southern	142.50 to 150.00
Kraft, Bleach., Canadian	145.00 to 150.00
Kraft, Unbleached, Northern	132.50—
Kraft, Unbleached, Southern	100.00—
Kraft, Unbleached, Canadian	100.00 to 125.00
Kraft, Semi-Bleached, Southern	140.00—
Sulphite Screenings	72.50—
Sulphate Screenings	67.50—
Groundwood	82.50 to 87.50

Quotations on imported wood pulp, dollars per short ton, on dock American Atlantic ports with varying freight allowances, follow:

Bleached Sulphite, Swedish	130.00 to 140.00
Bleached Sulphite, Norwegian, freight allowed	140.00—
Bleached Sulphite, Finnish, freight allowed	140.00—
Unbleached Sulphite, Swedish	110.00 to 115.00
Unbleached Sulphite, Finnish, freight allowed	120.00 to 125.00
Kraft, Unbleached, Swedish	100.00 to 105.00
Kraft, Unbleached, Finnish, freight allowed	105.00 to 135.00
Kraft, Bleached, Swedish, on dock	137.50 to 142.50
Kraft, Bleached, Norwegian	

PAPER

Boards—

Prices per ton, delivered, 10 tons or more:

Plain Chip	70.00—
News vat lined chip	82.50—
Filled news	82.50—
Solid news	85.00—
White vat lined chip	115.00—
Chip tube and can stock	90.00—
Single manila lined chip	120.00—
Single jute lined chip	115.00—
White patent coated:	
.020	155.00—
.018	157.50—
.016	160.00—

Book Paper—

Coated two sides

70 lb. No. 2 enamel, 25x38-500, trimmed 4 sides	4 cases $17.25 Carloads $16.30
45 lb. enamel, 25x38-500, trimmed 4 sides	4 cases $13.05 Carloads $12.10

Uncoated

55 lb. No. 2 offset, 25x38-500, trimmed 4 sides	4 cases $14.80 Carloads $13.85
50 lb. A Grade English Finish, 25x38-500, untrimmed	4 cases $14.05 Carloads $13.10
20 lb. envelope, 17x22-500, untrimmed	Carloads $12.40
16 lb. tablet, 17x22-500	Carloads $11.[illegible]

Rag Content Bond—

Extra 100% rag	70.45—
100% rag	62.65—
75% rag	48.15—
50% rag	38.90—
25% rag	31.75—

Rag Content Ledger—

Extra 100% rag	72.65—
100% rag	63.90—
85% rag	52.50—
75% rag	49.40—
50% rag	40.20—
25% rag	33.00—

Sulphite Bond—

Air dry bond (Watermarked)	19.00—
No. 1 bond (M.F. watermarked)	15.00—
No. 2 bond (M.F. watermarked)	14.00—
Plain bond (M.F. unwatermarked)	14.00—

Sulphite Ledger—

No. 1, M.F. watermarked	20.50
No. 2, M.F. watermarked	19.50
Plain, M.F. unwatermarked	19.00

News—	per ton
Rolls, Standard (Contract)	123.00 to 126.00
Rolls (Spot)	(Nominal)
Sheets	133.00—

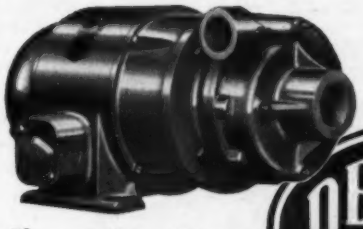
Tissues (Carlots)—	per ream
White No. 1	1.75—
White No. 2	1.35—
Bleached Anti-Tarnish	2.20—
Colored	2.00—
Anti-Tarnish Kraft	1.65—
Manila	2.00—
Napkins, semi-crepe (12½ lb. to M shts.) per cs.	.90—
Napkins, full crepe and embossed (12½ lb. to M shts.) per cs.	.90—
Toilet, Bleached (M shts.) per cs.	9.35—
Toilet, Unbleached (M shts.) per cs.	7.90—

Towels	per case
Bleached	6.80—
Unbleached	5.90—

Wrappings (Kraft)—	per cwt.
Standard wrapping	7.75—
Butchers, counter rolls	8.25—
Standard bag, mill rolls	7.50—
Shipping sack, mill rolls	7.75—
Gumming, mill rolls	8.00—
Asphalting, mill rolls	7.75—
Envelope, mill rolls	9.25—

PERFORMANCE IS GREAT— MAINTENANCE IS EASY... WHEN YOUR PUMP IS A PEERLESS Fluidyne

WIDEST RANGE OF SIZES, CAPACITIES AND HEADS—



¼ to 150 HP
10 to 5500 GPM

PEERLESS PUMPS

Choose Your Pump FROM THE FLUIDYNE LINE

It's one of the broadest and most complete lines of horizontal end-suction general purpose pumps offered by any manufacturer. Two types are available, fitting most all piping and pumping layouts, as well as system sub-assemblies. Peerless Type PE is a close-coupled electric drive, using standard pump motors. Type PB is adaptable to flexible-coupled or belt-drive. Both types provide excellent efficiencies. They are compact, dependable, economical and durable. Maintenance is easy because Peerless design and construction are so simple. Apply them whenever you need an economical general purpose water handling pump.

CHARACTERISTICS AT A GLANCE

CAPACITIES AND HEADS

TYPE PE Close-coupled—¼ to 40 hp
Up to 65 gpm fractional hp sizes
Up to 1000 gpm integral hp sizes
Up to 110 ft. fractional hp sizes
Up to 200 ft. integral hp sizes

TYPE PB Flexible-coupled—¼ to 150 hp
Up to 50 gpm fractional hp sizes
Up to 5500 gpm integral hp sizes
Up to 90 ft. fractional hp sizes
Up to 260 ft. integral hp sizes

NEW BULLETIN describes all the features of pumps in the Peerless Fluidyne line. Write for your copy of this profusely illustrated and detailed engineering bulletin today.

MAIL COUPON TODAY

fmc PEERLESS PUMP

PEERLESS PUMP DIVISION
FOOD MACHINERY AND CHEMICAL CORPORATION
Los Angeles 31, California

Please send me a copy of Peerless Fluidyne Pump Bulletin No. B-2300.

NAME_____
COMPANY_____
STREET_____
CITY_____ STATE_____
Pap. Ind.

PEERLESS BUILDS DEPENDABLE PUMPS

POSTERS
—A POTENT SAFETY TOOL

Posters should be one of the top aids in your safety program. No other safety medium can reach your entire audience—not once, but many times each day—with such low-cost safety messages. They are directed at the worker acts and worker attitudes that lead to accidents. Posters lend *timeliness, repetition and continuity* to your safety program . . . the three fundamental principles of direct selling.

The National Safety Council maintains a stock of posters that covers all industries, operations and phases of safety and health. These posters are produced in three sizes: "A" size, 8½" x 11½"; "B" size, 17x23"; and "C" size, 25x38". Their colorful illustrations and eye-catching captions make them ideal for the mass selling of safety.

Write for a free copy of the 1951 Directory of Occupational Safety Posters. This 72 page catalog illustrates 744 posters, indexed and classified for specific operations.

NATIONAL SAFETY COUNCIL

425 N. Michigan Ave.
Chicago 11, Illinois

The Paper Industry Index to Advertisers

When writing them, please mention The PAPER INDUSTRY.

Refer to the Paper and Pulp Mill Catalogue and Engineering Handbook at your mill office, for complete listing of all advertisers' products.

Advertising Council, Inc.
Airkem, Inc.
American Car & Foundry Co.
American Lumber & Treating Co. 473
Appleton Machine Co., The
Appleton Wire Works, Inc. 385
Appleton Woolen Mills 489
Armour and Company 394
Armstrong Machine Works 393
Asten-Hill Mfg. Co.
Atkins Saw Div., Borg-Warner Corp.

Babcock & Wilcox Co., Tubular Products Division
Bagley & Sewall Co., The
Bailey Meter Company 408
Barco Manufacturing Co. 379
Bauer Bros. Co., The
Beloit Iron Works
Binks Manufacturing Co.
Bird Machine Company 412
Blaw-Knox Company 415
Bowser, Inc. 474
Bowsher Co., The N. P. 484
Buffalo Electro-Chemical Co., Inc.

Cambridge Instrument Co., Inc.
Cameron Machine Co.
Carthage Machine Co.
Chicago Bridge & Iron Company 382
Clark Equipment Company
Classified Advertising 489
Cochrane Chemical Co. 441
Cuno Engineering Corp.
Curlator Corporation

DeZurik Shower Company 480
Diamond Iron Works, Inc.
Dicalite Div., Great Lakes Carbon Corporation 468
Dings Magnetic Separator Co.
Downingtown Mfg. Co.
Draper Brothers Company 414
du Pont de Nemours & Co., E. I.

Eastwood-Nealley Corporation 475
Electric Machinery Mfg. Co.
English China Clays Sales Corp. 485

Falk Corporation, The
Federal Fawick Corporation
Felker Bros. Mfg. Co. 482
Fisher Governor Co. 403
Fiske Brothers Refining Co., Lubriplate Div. 472
Fritz Publications, Inc. 489, 493

Garlock Packing Co., The
General American Trans. Corp.
General Chemical Division, Allied Chemical & Dye Corporation 389
Gilbert & Nash Company
Goldman Paper Co., G. B. 489
Goslin-Birmingham Mfg. Co. Inc.
Goulds Pumps, Inc.
Graton & Knight Co. 380

Hanchett Manufacturing Co. 410
Hercules Powder Company 422
Hooper & Sons Co., Wm. E. 433
Hubinger Company, The 434
Hudson-Sharp Machine Company 441
Humphrey Elevator Company 487
Hunt Machine Co., Rodney 490
Huyck & Sons, F. C. 388

Improved Machinery, Inc. 395
International Harvester Co. 399

Jackson & Church Company 2nd Cover
Jeffrey Mfg. Co., The
Jenssen Company, Inc., G. D. 489
Johnson Corporation, The 429-430
Jones & Sons Company. E. D. 426

Kalamazoo Tank & Silo Co.
Kelco Company 407
Kewanee-Ross Corporation 398
Kuhns Brothers Company, The

Langston Co., Samuel M. 400
Layne & Bowler, Inc. 391
Leeds & Northrup Company
Lindsay Wire Weaving Co., The 390
Link-Belt Company 409
Lockport Felt Company
Lodding Engineering Corp.
Lubriplate Div., Fiske Brothers Refining Co. 472
Lunkenheimer Co., The 4th Cover

Magnus Metal Corporation
Manchester Machine Co., The
Manhattan Rubber Division
Mason-Neilan Regulator Co.
Michigan Pipe Company 470
Michigan Steel Casting Co. 445
Midvale Company, The
Midwest-Fulton Machine Co., The 487
Midwest Piping Company, Inc.
Morden Machines Company 405
Morningstar, Nicol, Inc. 476
Mt.-Vernon-Woodberry Mills, Inc.
Murray Mfg. Co., D. J. 396

Nash Engineering Co., The 471
National Aluminate Corp. 1st Cover
National Safety Council 492
National Starch Products, Inc.
National Tank & Pipe Co. 484
Newcomb-Detroit Co. 441
Nichols Engr. & Research Corp.

(Continued on facing page)

Noble & Wood Machine Co.....
Norton Company.....392

Oakite Products, Inc.....442
Oilgear Company, The.....
Oldbury Electro-Chemical Co.....
Oliver United Filters, Inc.....
Ontario Paper Co., Ltd.....384

Palladium Mastic Corp. of America.....
Pandia, Inc.....
Paper and Pulp Mill Catalogue.....493
Paper Industry, The.....489
Peerless Pump Div., Food Machinery & Chemical Corporation.....491
Perfecting Service Co.....3rd Cover
Perkins & Son, Inc., B. F.....402
Permutit Company, The.....487
Photovolt Corporation.....445
Poole Foundry & Machine Co.....442
Powell Company, The Wm.....417
Pusey & Jones Corp., The.....421

Raybestos-Manhattan, Inc.....
Raymond Service, Inc., Chas. P.....489
Read Standard Corporation.....
Red-Ray Mfg. Co., Inc.....
Rice Barton Corporation.....
Rice Barton Research Corp.....
Roots-Connersville Blower Div.....416
Ross Engineering Corp., J. O.....
R-S Products Corporation.....

Sandy Hill Iron & Brass Works.....468
Shenango-Penn Mold Company.....397
Shuler & Benninghofen.....406
Smidth & Co., F. L.....
Stainless Welded Products, Inc.....
Staley Mfg. Co., A. E.....401
Standard Oil Co. (Indiana).....386
Stebbins Engineering & Mfg. Co.....442
Stephens-Adamson Mfg. Co.....445
Stickle Steam Specialties Co.....467
Sutherland, Inc.....
Sutherland Refiner Corp.....
Swenson Evaporator Company.....
Swift & Company.....387

Testing Machines, Inc.....467
Texas Gulf Sulphur Co.....404
Timken Roller Bearing Co.....
Titanium Pigment Corporation.....437
Turner Halsey Company.....

U.S.A.—Treasury Dept.....494

Valley Iron Works Company.....
Vanderbilt Co., Inc., R. T.....

Waterbury & Sons Co., H.....468
Waterbury Felt Co., The.....
Weyerhaeuser Timber Co.....
Whiting Corporation.....
Williams-Gray Company.....467
Wisconsin Wire Works.....489
Wolferz Alloy Equipment, E. C.....479
Wyandotte Chemicals Corporation.....

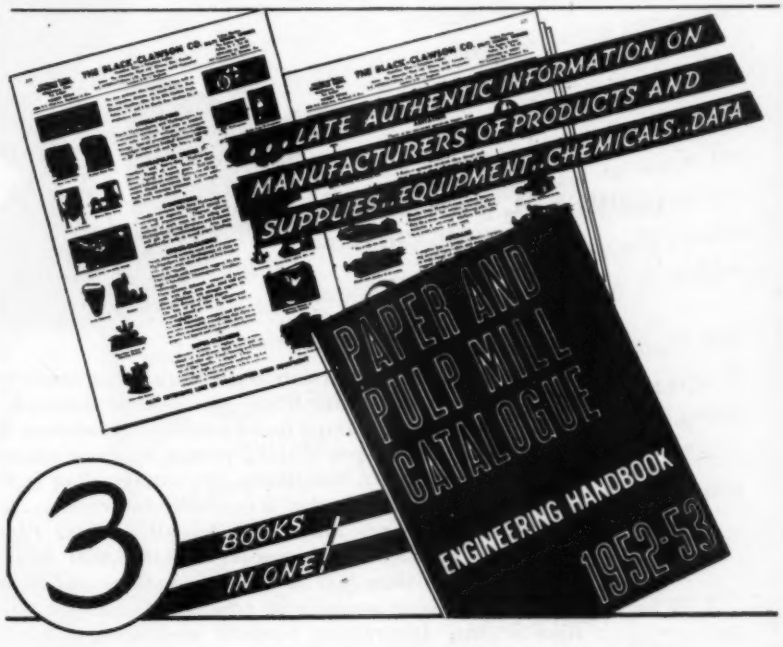
Yarnall-Waring Company.....383
Youngstown Welding & Engineering Co., The.....

Professional & Business Services Section
Chemical Linings, Inc.....
Sirrine Company, J. E.....488

It's in here!

. . . the 1952-53

Paper and Pulp Mill Catalogue


. . . LATE AUTHENTIC INFORMATION ON
MANUFACTURERS OF PRODUCTS AND
SUPPLIES . . EQUIPMENT . . CHEMICALS . . DATA
PAPER AND PULP MILL CATALOGUE
ENGINEERING HANDBOOK
1952-53
3
BOOKS IN ONE!

1 . . . **Manufacturers Catalogue Section** . . . contains pages and inserts giving exact data on equipment.

2 . . . **Buyers Service Section** . . . includes a comprehensive cross-indexed list of products for this industry, and listings of responsible manufacturers and suppliers.

3 . . . **Engineering Handbook** . . . is an extensive source of vital facts for this industry—quick information for the industry's executives: 128 and more pages of engineering data, graphs, charts, tables, etc.

It's in your Mill Office . . . See it NOW!

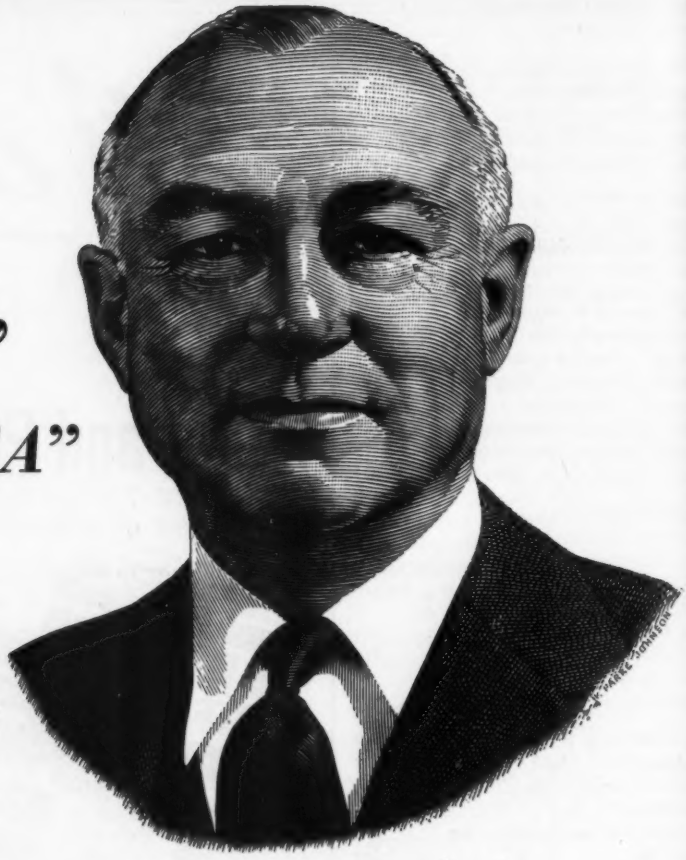
Glance through this exhaustive mine of information. Read about the new equipment available. Write for manufacturers new catalogs. And, whatever your need—look for it in the PAPER AND PULP MILL CATALOGUE.

PAPER AND PULP MILL CATALOGUE *and* The PAPER INDUSTRY *monthly magazine are published by*

Fritz Publications, Inc.
431 South Dearborn Street, Chicago 5

Since 1919
the Service Organization of the Paper and Pulp Industry

"...Well done, AMERICA"



GEORGE M. HUMPHREY
Secretary of the Treasury

"Few things in America contribute more importantly to national security than the Payroll Savings Plan—the vehicle through which millions of employed men and women build security, counteract inflation and create a reserve of future purchasing power by their monthly investment in U. S. Savings Bonds. Credit for this outstanding influence in our lives is due largely to a team that is typically American... far-sighted business executives who have made the Payroll Savings Plan available to the employees of 45,000 companies... 8,000,000 Payroll Savers... publishers of more than 500 business magazines and the management of the other advertising media who contribute generously of their space and time... the Advertising Council and advertising agencies who give freely of their skills. To these and to all who have a part in building the Payroll Savings Plan, the U. S. Treasury Department welcomes this opportunity to say, "Well done, America."

Do you know—

• on May 1, 1953, the cash value of Series E Bonds outstanding—the kind bought by Payroll Savers—reached a new record high—$35.5 billion—$1 billion more than the value of E Bonds held on May 1, 1951, when E Bonds commenced to mature.

• cash sales of Savings Bonds, all series, during the first four months of 1953 totaled $1,741,273,000—22% above those of the first four months of 1952.

• of the approximately $6.7 billion E Bonds which had come due up to the end of April, 1953, $5.1 billion, or 75% were retained by their owners beyond maturity.

• every month, nearly 8,000,000 Payroll Savers purchase about $160,000,000 in Series E Bonds.

For assistance in installing a Payroll Savings Plan, or building participation in an existing Plan, write to Savings Bond Division, U. S. Treasury Department, Suite 700, Washington Building, Washington, D. C.

The United States Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the Advertising Council and

The PAPER INDUSTRY

ROTARY UNION ....The Joint That Can Take It

The Type "FSG" ROTARY UNION is the steam joint that has kept pace with the constantly increasing speeds, pressures, and temperatures that are being introduced in paper mill equipment.

When Perfecting Service Co. was founded in 1938 it was organized by a paper mill engineer to serve the paper industry. The Type "FSG" is the finest revolving steam connection ever built for paper mill service and will take the most rugged service in its stride.

The Type "FSG" is engineered so that stress and strain are taken from moving and sealing parts. It requires no lubrication. These and other factors account for its exceptionally long service. Three years of continuous service with no maintenance of any sort, are common.

You'll get rid of your sealing troubles when you install the Type "FSG" ROTARY UNION on your dryers, calenders, digesters, etc. Contact our nearest office for consultation or write Dept. 7P for our Catalog.

Type "FSG" ROTARY UNION

"WHERE *Good Connections* COUNT"

REG. U. S. PAT. OFF.

PERFECTING SERVICE COMPANY

332 Atando Ave. (Home Office and Factory) Charlotte, N. C.

Offices in Chicago • Atlanta • Philadelphia • Providence • New York
Cleveland • Montreal • Toronto

THIS Bronze-Mounted IRON BODY VALVE

CUTS YOUR MAINTENANCE

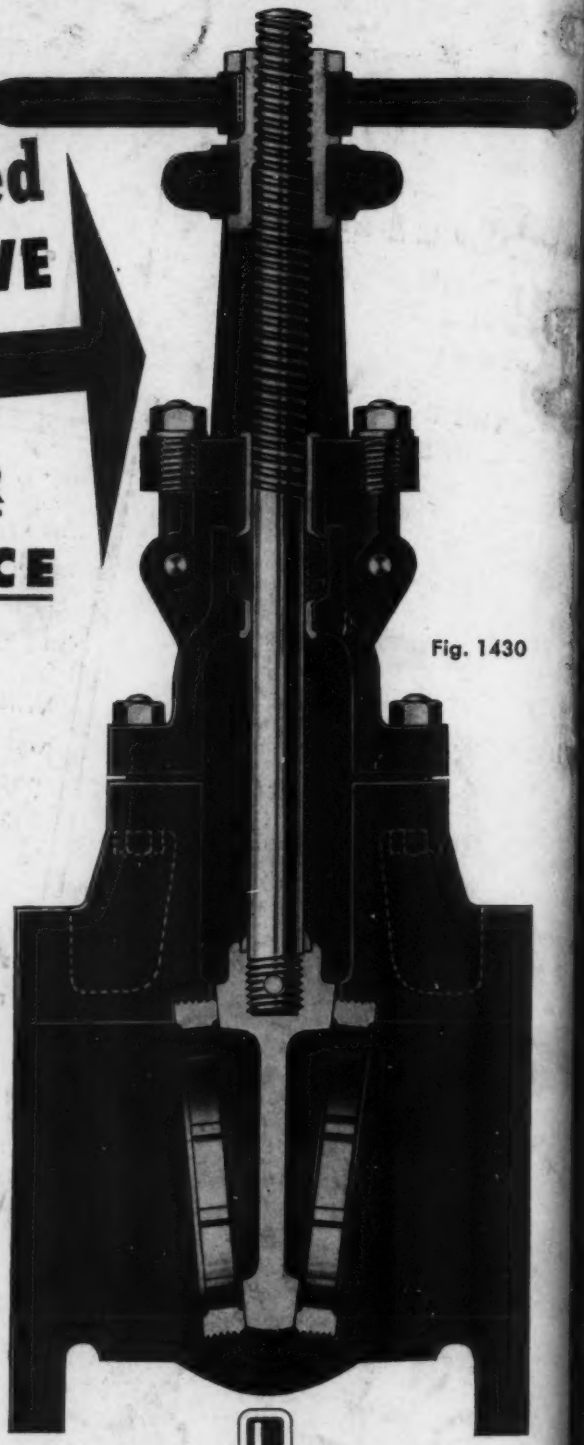


Fig. 1430

Only Lunkenheimer Iron Body Valves have stems made of "Stemalloy"* — the patented bronze alloy which outwears all other stem materials three-to-one. "Stemalloy"* stems have been tested at more than 300,000 actual openings and closings. Millions are in use . . . without a single failure.

The bronze stem never touches iron. It travels in bronze bushings which guard against corrosion and possible scoring of the stem and packing.

Notice the generous body thicknesses, non-distorting bronze disc, modern end-seated seat rings, and the bonnet bushing which permits repacking under pressure. Ask your distributor about the other advantages of the Lunkenheimer Iron Body Bronze-Mounted line.

*Patented Alloy

WRITE FOR Circular 564, describing iron valves in detail, to The Lunkenheimer Company, Box 360S, Cincinnati 14, Ohio.

IRON · STEEL · BRONZE

LUNKENHEIMER

THE ONE *Great* NAME IN VALVES

L-752-4

AUGUST 1953